

DOCUMENT RESUME

ED 365 290

IR 016 462

TITLE Emerging Telecommunications Technologies. Hearings on H.R. 707, A Bill To Establish Procedures To Improve the Allocation and Assignment of the Electromagnetic Spectrum, before the Subcommittee on Telecommunications and Finance of the Committee on Energy and Commerce. House of Representatives, One Hundred Third Congress, First Session (February 4 and April 22, 1993).

INSTITUTION Congress of the U.S., Washington, DC. House Subcommittee on Telecommunications and Finance.

REPORT NO ISBN-0-16-041279-X

PUB DATE 93

NOTE 194p.; Serial No. 1304-14. For Senate hearings on this bill, see ED 360 951.

AVAILABLE FROM U.S. Government Printing Office, Superintendent of Documents, Congressional Sales Office, Washington, DC 20402.

PUB TYPE Legal/Legislative/Regulatory Materials (090)

EDRS PRICE MF01/PC08 Plus Postage.

DESCRIPTORS *Broadcast Industry; Federal Legislation; Government Role; Hearings; *Information Networks; *Information Technology; Policy Formation; Public Policy; Technological Advancement; *Telecommunications

IDENTIFIERS Congress 103rd; Federal Communications Commission; *Frequency Allocation; House of Representatives; National Policy; Radio Frequency Distribution System; *Telecommunications Policy

ABSTRACT

The testimony responds to H.R. 707, a bill to identify 200 megahertz of electromagnetic spectrum for allocation to private and non-federal government users. The witnesses address how the spectrum can be used to deliver new products and services to all Americans; how additional radio spectrum is needed to keep America competitive; how wireless technology will play an increasing role in the country's infrastructure; how H.R. 707 will advance that role. Testimony was given by William D. deKay, Dial Page; Edward O. Fritts, National Association of Broadcasters; Geoffrey S. Goodfellow, Radiomail Corp; Paul Kozlowski, Digital Equipment Corporation; Jack Pellicci, Oracle Corp.; Ronnie Rand, Associated Public-Safety Communications Officers; Craig R. Roos, Personal Communications Network Services of New York; Wayne Schelle, American Personal Communications, on behalf of PCS Action; Eric J. Schimmel, Telecommunications Industry Association; Douglas G. Smith, Omnipoint Corp.; Thomas E. Wheeler, Cellular Telecommunications Industry Association; Edwin L. Harper, Association of American Railroads; Jim K. Omura, Cylink Corp.; and Michael E. Brunner, National Telephone Cooperative Association. (KRN)

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EMERGING TELECOMMUNICATIONS TECHNOLOGIES

ED 365 290

HEARINGS BEFORE THE SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE OF THE COMMITTEE ON ENERGY AND COMMERCE HOUSE OF REPRESENTATIVES ONE HUNDRED THIRD CONGRESS

FIRST SESSION

ON

H.R. 707

A BILL TO ESTABLISH PROCEDURES TO IMPROVE THE ALLOCATION
AND ASSIGNMENT OF THE ELECTROMAGNETIC SPECTRUM

FEBRUARY 4 AND APRIL 22, 1993

Serial No. 103-14

Printed for the use of the Committee on Energy and Commerce

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EMERGING TELECOMMUNICATIONS TECHNOLOGIES

THURSDAY, FEBRUARY 4, 1993

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE,
Washington, DC.

The committee met, pursuant to notice, at 12:54 p.m., in room 2123, Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Mr. MARKEY. Thank you all very much for your cooperation. I apologize for the delay in the commencement of this hearing, but you have to understand that Congressional planning is a lot like Chevy Chase nightlife; there is no such thing. So we are suffering under this limitation here today and we appreciate all of your understanding.

Two weeks ago, the subcommittee began looking at the issue of a national communications infrastructure. At that hearing, John Sculley of Apple Computer testified about the need for a multi-dimensional communications infrastructure, one which has both a terrestrial and wireless component. Today, we continue our investigation of the communications infrastructure by reviewing legislation designed to free up more spectrum for use by private industry.

The bill before the subcommittee today, H.R. 707, was introduced by our full committee chairman, John Dingell, and myself, and requires the Secretary of Commerce to identify 200 megahertz of spectrum that can be turned over from the Government to the Federal Communications Commission for allocation to private and non-Federal Government users.

In many ways this legislation should be considered the first "jobs bill" of the Clinton era. This bill will create thousands of jobs and perhaps whole new industries. In 1968, 50 megahertz prompted the creation of what is today a \$10 billion cellular industry. The reallocation of 200 megahertz of spectrum—a precious resource—will spur robust economic growth precisely because the commercial viability of many exciting new technologies has been threatened by the lack of available useful spectrum.

As a nation that wants to be a leader in the wireless revolution, this bill serves as a pragmatic blueprint for job growth and the creative flowering of new products. The future is, literally, up in the air. We need to harness it. Furthermore, we cannot wait any longer and that is why moving this bill expeditiously is so important.

In short, the bill requires the Secretary of Commerce to identify spectrum that the Government now has and that can be reallocated

(1)

for use by private industry and non-Federal Government users. The bill sets out a long list of criteria that the Secretary must follow in order to make certain that the spectrum identified by the Secretary is of maximum value to private industry while of minimal costs to the Federal Government. By requiring the Secretary of Commerce to take these steps, we promote both more efficient use of the spectrum by the Government and free up a precious resource for private industry and non-Federal Government users.

As many of you know, this bill has been around the track a few times. Two years ago, this bill passed this subcommittee, the full committee and the House unanimously. I expect that we will repeat that feat once again. I also expect that 3 times will be a charm, and we will finish this critically needed improvement of our spectrum management.

The witnesses we will hear from today will attest to how spectrum can be utilized to deliver new products and services to all Americans. These witnesses will show how additional radio spectrum is needed to keep America competitive. We will also learn how wireless technology will play an increasing role in our infrastructure and how H.R. 707 will advance that role.

[Testimony resumes on p. 25.]

[The text of H.R. 707 follows:]

103D CONGRESS
1ST SESSION

H. R. 707

To establish procedures to improve the allocation and assignment of the electromagnetic spectrum, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

FEBRUARY 2, 1993

Mr. DINGELL (for himself and Mr. MARKEY) introduced the following bill;
which was referred to the Committee on Energy and Commerce

A BILL

To establish procedures to improve the allocation and assignment of the electromagnetic spectrum, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the "Emerging Tele-
5 communications Technologies Act of 1993".

6 **SEC. 2. AMENDMENT TO THE NATIONAL TELECOMMUNI-**
7 **CATIONS AND INFORMATION ADMINISTRA-**
8 **TION ORGANIZATION ACT.**

9 The National Telecommunications and Information
10 Administration Organization Act is amended—

- 1 (1) by redesignating part B as part C; and
2 (2) by inserting after part A the following new
3 part:

4 **"PART B—EMERGING TELECOMMUNICATIONS**
5 **TECHNOLOGIES**

6 **"SEC. 111. FINDINGS.**

7 "The Congress finds that—

8 "(1) the Federal Government currently reserves
9 for its own use, or has priority of access to, approxi-
10 mately 40 percent of the electromagnetic spectrum
11 that is assigned for use pursuant to the Communica-
12 tions Act of 1934;

13 "(2) many of such frequencies are underutilized
14 by Federal Government licensees;

15 "(3) the public interest requires that many of
16 such frequencies be utilized more efficiently by Fed-
17 eral Government and non-Federal licensees;

18 "(4) additional frequencies are assigned for
19 services that could be obtained more efficiently from
20 commercial carriers or other vendors;

21 "(5) scarcity of assignable frequencies for li-
22 censing by the Commission can and will—

23 "(A) impede the development and commer-
24 cialization of new telecommunications products
25 and services;

1 “(B) limit the capacity and efficiency of
2 the United States telecommunications systems;

3 “(C) prevent some State and local police,
4 fire, and emergency services from obtaining ur-
5 gently needed radio channels; and

6 “(D) adversely affect the productive capac-
7 ity and international competitiveness of the
8 United States economy;

9 “(6) a reassignment of these frequencies can
10 produce significant economic returns; and

11 “(7) the Secretary of Commerce, the President,
12 and the Federal Communications Commission should
13 be directed to take appropriate steps to correct these
14 deficiencies.

15 **“SEC. 112. NATIONAL SPECTRUM PLANNING.**

16 “(a) **PLANNING ACTIVITIES.**—The Assistant Sec-
17 retary and the Chairman of the Commission shall meet,
18 at least biannually, to conduct joint spectrum planning
19 with respect to the following issues—

20 “(1) the future spectrum requirements for pub-
21 lic and private uses, including State and local gov-
22 ernment public safety agencies;

23 “(2) the spectrum allocation actions necessary
24 to accommodate those uses; and

1 “(3) actions necessary to promote the efficient
2 use of the spectrum, including spectrum manage-
3 ment techniques to promote increased shared use of
4 the spectrum that does not cause harmful inter-
5 ference as a means of increasing commercial access.

6 “(b) REPORTS.—The Assistant Secretary and the
7 Chairman of the Commission shall submit a joint annual
8 report to the Committee on Energy and Commerce of the
9 House of Representatives, the Committee on Commerce,
10 Science, and Transportation of the Senate, the Secretary,
11 and the Commission on the joint spectrum planning activi-
12 ties conducted under subsection (a) and recommendations
13 for action developed pursuant to such activities.

14 “(c) REPORTING REQUIREMENTS.—The first annual
15 report submitted after the date of the report by the advi-
16 sory committee under section 113(d)(4) shall—

17 “(1) include an analysis of and response to that
18 committee report; and

19 “(2) include an analysis of the effect on spec-
20 trum efficiency and the cost of equipment to Federal
21 spectrum users of maintaining separate allocations
22 for Federal Government and non-Federal Govern-
23 ment licensees for the same or similar services.

1 "SEC. 113. IDENTIFICATION OF REALLOCABLE FRE-
2 QUENCIES.

3 "(a) IDENTIFICATION REQUIRED.—The Secretary
4 shall, within 24 months after the date of the enactment
5 of this part, prepare and submit to the President and the
6 Congress a report identifying bands of frequencies that—

7 "(1) are allocated on a primary basis for Fed-
8 eral Government use and eligible for licensing pursu-
9 ant to section 305(a) of the Act (47 U.S.C. 305(a));

10 "(2) are not required for the present or identifi-
11 able future needs of the Federal Government;

12 "(3) can feasibly be made available, as of the
13 date of submission of the report or at any time dur-
14 ing the next 15 years, for use under the Act (other
15 than for Federal Government stations under such
16 section 305);

17 "(4) will not result in costs to the Federal Gov-
18 ernment, or losses of services or benefits to the pub-
19 lic, that are excessive in relation to the benefits that
20 may be obtained by non-Federal licensees; and

21 "(5) are most likely to have the greatest poten-
22 tial for productive uses and public benefits under the
23 Act.

24 "(b) MINIMUM AMOUNT OF SPECTRUM REC-
25 OMMENDED.—

1 “(1) IN GENERAL.—Based on the report re-
2 quired by subsection (a), the Secretary shall rec-
3 ommend for reallocation, for use other than by Fed-
4 eral Government stations under section 305 of the
5 Act (47 U.S.C. 305), bands of frequencies that span
6 a total of not less than 200 megahertz, that are lo-
7 cated below 6 gigahertz, and that meet the criteria
8 specified in paragraphs (1) through (4) of subsection
9 (a). The Secretary may not include, in such 200
10 megahertz, bands of frequencies that span more
11 than 20 megahertz and that are located between 5
12 and 6 gigahertz. If the report identifies (as meeting
13 such criteria) bands of frequencies spanning more
14 than 200 megahertz, the report shall identify and
15 recommend for reallocation those bands (spanning
16 not less than 200 megahertz) that meet the criteria
17 specified in paragraph (5) of such subsection.

18 “(2) MIXED USES PERMITTED TO BE COUNT-
19 ED.—Bands of frequencies which the Secretary’s re-
20 port recommends be partially retained for use by
21 Federal Government stations, but which are also
22 recommended to be reallocated to be made available
23 under the Act for use by non-Federal stations, may
24 be counted toward the minimum spectrum required
25 by paragraph (1) of this subsection, except that—

1 “(A) the bands of frequencies counted
2 under this paragraph may not count toward
3 more than one-half of the minimum required by
4 paragraph (1) of this subsection;

5 “(B) a band of frequencies may not be
6 counted under this paragraph unless the assign-
7 ments of the band to Federal Government sta-
8 tions under section 305 of the Act (47 U.S.C.
9 305) are limited by geographic area, by time, or
10 by other means so as to guarantee that the po-
11 tential use to be made by such Federal Govern-
12 ment stations is substantially less (as measured
13 by geographic area, time, or otherwise) than the
14 potential use to be made by non-Federal sta-
15 tions; and

16 “(C) the operational sharing permitted
17 under this paragraph shall be subject to coordi-
18 nation procedures which the Commission shall
19 establish and implement to ensure against
20 harmful interference.

21 “(c) CRITERIA FOR IDENTIFICATION.—

22 “(1) NEEDS OF THE FEDERAL GOVERNMENT.—

23 In determining whether a band of frequencies meets
24 the criteria specified in subsection (a)(2), the Sec-
25 retary shall—

1 “(A) consider whether the band of fre-
2 quencies is used to provide a communications
3 service that is or could be available from a com-
4 mercial carrier or other vendor;

5 “(B) seek to promote—

6 “(i) the maximum practicable reliance
7 on commercially available substitutes;

8 “(ii) the sharing of frequencies (as
9 permitted under subsection (b)(2));

10 “(iii) the development and use of new
11 communications technologies; and

12 “(iv) the use of nonradiating commu-
13 nications systems where practicable; and

14 “(C) seek to avoid—

15 “(i) serious degradation of Federal
16 Government services and operations; and

17 “(ii) excessive costs to the Federal
18 Government and users of Federal Govern-
19 ment services.

20 “(2) FEASIBILITY OF USE.—In determining
21 whether a frequency band meets the criteria speci-
22 fied in subsection (a)(3), the Secretary shall—

23 “(A) assume such frequencies will be as-
24 signed by the Commission under section 303 of

1 the Act (47 U.S.C. 303) over the course of not
2 less than 15 years;

3 “(B) assume reasonable rates of scientific
4 progress and growth of demand for tele-
5 communications services;

6 “(C) determine the extent to which the
7 reallocation or reassignment will relieve actual
8 or potential scarcity of frequencies available for
9 licensing by the Commission for non-Federal
10 use;

11 “(D) seek to include frequencies which can
12 be used to stimulate the development of new
13 technologies; and

14 “(E) consider the immediate and recurring
15 costs to reestablish services displaced by the
16 reallocation of spectrum.

17 “(3) ANALYSIS OF BENEFITS.—In determining
18 whether a band of frequencies meets the criteria
19 specified in subsection (a)(4), the Secretary shall
20 consider—

21 “(A) the extent to which equipment is or
22 will be available that is capable of utilizing the
23 band;

1 “(B) the proximity of frequencies that are
2 already assigned for commercial or other non-
3 Federal use; and

4 “(C) the activities of foreign governments
5 in making frequencies available for experimen-
6 tation or commercial assignments in order to
7 support their domestic manufacturers of equip-
8 ment.

9 “(4) POWER AGENCY FREQUENCIES.—

10 “(A) ELIGIBLE FOR MIXED USE ONLY.—

11 The frequencies assigned to any Federal power
12 agency may only be eligible for mixed use under
13 subsection (b)(2) in geographically separate
14 areas and shall not be recommended for the
15 purposes of withdrawing that assignment. In
16 any case where a frequency is to be shared by
17 an affected Federal power agency and a non-
18 Federal user, such use by the non-Federal user
19 shall, consistent with the procedures established
20 under subsection (b)(2)(C), not cause harmful
21 interference to the affected Federal power agen-
22 cy or adversely affect the reliability of its power
23 system.

24 “(B) DEFINITION.—As used in this para-
25 graph, the term ‘Federal power agency’ means

1 the Tennessee Valley Authority, the Bonneville
2 Power Administration, the Western Area Power
3 Administration, or the Southwestern Power
4 Administration.

5 “(d) PROCEDURE FOR IDENTIFICATION OF
6 REALLOCABLE BANDS OF FREQUENCIES.—

7 “(1) SUBMISSION OF PRELIMINARY IDENTIFICA-
8 TION TO CONGRESS.—Within 12 months after the
9 date of the enactment of this part, the Secretary
10 shall prepare and submit to the Congress a report
11 which makes a preliminary identification of
12 reallocable bands of frequencies which meet the cri-
13 teria established by this section.

14 “(2) CONVENING OF ADVISORY COMMITTEE.—
15 Not later than the date the Secretary submits the
16 report required by paragraph (1), the Secretary shall
17 convene an advisory committee to—

18 “(A) review the bands of frequencies iden-
19 tified in such report;

20 “(B) advise the Secretary with respect to
21 (i) the bands of frequencies which should be in-
22 cluded in the final report required by subsection
23 (a), and (ii) the effective dates which should be
24 established under subsection (e) with respect to
25 such frequencies;

1 “(C) receive public comment on the Sec-
2 retary’s report and on the final report; and

3 “(D) prepare and submit the report re-
4 quired by paragraph (4).

5 The advisory committee shall meet at least monthly
6 until each of the actions required by section 114(a)
7 have taken place.

8 “(3) COMPOSITION OF COMMITTEE; CHAIR-
9 MAN.—The advisory committee shall include—

10 “(A) the Chairman of the Commission and
11 the Assistant Secretary, and one other rep-
12 resentative of the Federal Government as des-
13 ignated by the Secretary; and

14 “(B) representatives of—

15 “(i) United States manufacturers of
16 spectrum-dependent telecommunications
17 equipment;

18 “(ii) commercial carriers;

19 “(iii) other users of the electro-
20 magnetic spectrum, including radio and
21 television broadcast licensees, State and
22 local public safety agencies, and the avia-
23 tion industry; and

1 “(iv) other interested members of the
2 public who are knowledgeable about the
3 uses of the electromagnetic spectrum.

4 A majority of the members of the committee shall be
5 members described in subparagraph (B), and one of
6 such members shall be designated as chairman by
7 the Secretary.

8 “(4) RECOMMENDATIONS ON SPECTRUM ALLO-
9 CATION PROCEDURES.—The advisory committee
10 shall, not later than 36 months after the date of the
11 enactment of this part, submit to the Secretary, the
12 Commission, the Committee on Energy and Com-
13 merce of the House of Representatives, and the
14 Committee on Commerce, Science, and Transpor-
15 tation of the Senate, a report containing such rec-
16 ommendations as the advisory committee considers
17 appropriate for the reform of the process of allocat-
18 ing the electromagnetic spectrum between Federal
19 and non-Federal use, and any dissenting views
20 thereon.

21 “(e) TIMETABLE FOR REALLOCATION AND LIMITA-
22 TION.—

23 “(1) TIMETABLE REQUIRED.—The Secretary
24 shall, as part of the report required by subsection
25 (a), include a timetable that recommends immediate

1 and delayed effective dates by which the President
2 shall withdraw or limit assignments on the fre-
3 quencies specified in the report.

4 “(2) EXPEDITED REALLOCATION OF INITIAL 30
5 MHZ PERMITTED.—The Secretary may prepare and
6 submit to the President a report which specifically
7 identifies an initial 30 megahertz of spectrum that
8 meets the criteria described in subsection (a) and
9 that can be made available for reallocation imme-
10 diately upon issuance of the report required by this
11 section.

12 “(3) DELAYED EFFECTIVE DATE.—The rec-
13 ommended delayed effective dates shall—

14 “(A) permit the earliest possible
15 reallocation of the frequency bands, taking into
16 account the requirements of section 115(1);

17 “(B) be based on the useful remaining life
18 of equipment that has been purchased or con-
19 tracted for to operate on identified frequencies;

20 “(C) be based on the need to coordinate
21 frequency use with other nations; and

22 “(D) take into account the relationship be-
23 tween the costs to the Federal Government of
24 changing to different frequencies and the bene-
25 fits that may be obtained from commercial and

1 other non-Federal uses of the reassigned fre-
2 quencies.

3 **"SEC. 114. WITHDRAWAL OF ASSIGNMENT TO FEDERAL**
4 **GOVERNMENT STATIONS.**

5 **"(a) IN GENERAL.—**The President shall—

6 **"(1)** within 6 months after receipt of the Sec-
7 retary's report under section 113(a), withdraw the
8 assignment to a Federal Government station of any
9 frequency which the report recommends for imme-
10 diate reallocation;

11 **"(2)** within such 6-month period, limit the as-
12 signment to a Federal Government station of any
13 frequency which the report recommends be made im-
14 mediately available for mixed use under section
15 113(b)(2);

16 **"(3)** by the delayed effective date recommended
17 by the Secretary under section 113(e) (except as
18 provided in subsection (b)(4) of this section), with-
19 ^o draw or limit the assignment to a Federal Govern-
20 ment station of any frequency which the report rec-
21 ommends be reallocated or made available for mixed
22 use on such delayed effective date;

23 **"(4)** assign or reassign other frequencies to
24 Federal Government stations as necessary to adjust
25 to such withdrawal or limitation of assignments; and

1 “(5) transmit a notice and description to the
2 Commission and each House of Congress of the ac-
3 tions taken under this subsection.

4 “(b) EXCEPTIONS.—

5 “(1) AUTHORITY TO SUBSTITUTE.—If the
6 President determines that a circumstance described
7 in paragraph (2) exists, the President—

8 “(A) may substitute an alternative fre-
9 quency or band of frequencies for the frequency
10 or band that is subject to such determination
11 and withdraw (or limit) the assignment of that
12 alternative frequency or band in the manner re-
13 quired by subsection (a); and

14 “(B) shall submit a statement of the rea-
15 sons for taking the action described in subpara-
16 graph (A) to the Committee on Energy and
17 Commerce of the House of Representatives and
18 the Committee on Commerce, Science, and
19 Transportation of the Senate.

20 “(2) GROUNDS FOR SUBSTITUTION.—For pur-
21 poses of paragraph (1), the following circumstances
22 are described in this paragraph:

23 “(A) the reassignment would seriously
24 jeopardize the national defense interests of the
25 United States;

1 “(B) the frequency proposed for reassign-
2 ment is uniquely suited to meeting important
3 governmental needs;

4 “(C) the reassignment would seriously
5 jeopardize public health or safety; or

6 “(D) the reassignment will result in costs
7 to the Federal Government that are excessive in
8 relation to the benefits that may be obtained
9 from commercial or other non-Federal uses of
10 the reassigned frequency.

11 “(3) CRITERIA FOR SUBSTITUTED FRE-
12 QUENCIES.—For purposes of paragraph (1), a fre-
13 quency may not be substituted for a frequency iden-
14 tified by the report of the Secretary under section
15 113(a) unless the substituted frequency also meets
16 each of the criteria specified by section 113(a).

17 “(4) DELAYS IN IMPLEMENTATION.—If the
18 President determines that any action cannot be com-
19 pleted by the delayed effective date recommended by
20 the Secretary pursuant to section 113(e), or that
21 such an action by such date would result in a fre-
22 quency being unused as a consequence of the Com-
23 mission’s plan under section 115, the President
24 may—

22 “(1) not propose the immediate distribution of
23 all such frequencies, but, taking into account the
24 timetable recommended by the Secretary pursuant to
25 section 113(e), shall propose—

1 “(A) gradually to distribute the frequencies
2 remaining, after making the reservation re-
3 quired by subparagraph (B), over the course of
4 a period of not less than 10 years beginning on
5 the date of submission of such plan; and

6 “(B) to reserve a significant portion of
7 such frequencies for distribution beginning after
8 the end of such 10-year period;

9 “(2) contain appropriate provisions to ensure—

10 “(A) the availability of frequencies for new
11 technologies and services in accordance with the
12 policies of section 7 of the Act (47 U.S.C. 157);
13 and

14 “(B) the availability of frequencies to stim-
15 ulate the development of such technologies;

16 “(3) address (A) the feasibility of reallocating
17 spectrum from current commercial and other non-
18 Federal uses to provide for more efficient use of the
19 spectrum, and (B) innovation and marketplace de-
20 velopments that may affect the relative efficiencies
21 of different spectrum allocations; and

22 “(4) not prevent the Commission from allocat-
23 ing bands of frequencies for specific uses in future
24 rulemaking proceedings.

1 "SEC. 116. AUTHORITY TO RECOVER REASSIGNED FRE-
2 QUENCIES.

3 "(a) AUTHORITY OF PRESIDENT.—Subsequent to the
4 withdrawal of assignment to Federal Government stations
5 pursuant to section 114, the President may reclaim reas-
6 signed frequencies for reassignment to Federal Govern-
7 ment stations in accordance with this section.

8 "(b) PROCEDURE FOR RECLAIMING FRE-
9 QUENCIES.—

10 "(1) UNALLOCATED FREQUENCIES.—If the fre-
11 quencies to be reclaimed have not been allocated or
12 assigned by the Commission pursuant to the Act,
13 the President shall follow the procedures for substi-
14 tution of frequencies established by section 114(b) of
15 this part.

16 "(2) ALLOCATED FREQUENCIES.—If the fre-
17 quencies to be reclaimed have been allocated or as-
18 signed by the Commission, the President shall follow
19 the procedures for substitution of frequencies estab-
20 lished by section 114(b) of this part, except that the
21 notification required by section 114(b)(1)(A) shall
22 include—

23 "(A) a timetable to accommodate an or-
24 derly transition for licensees to obtain new fre-
25 quencies and equipment necessary for its utili-
26 zation; and

1 “(B) an estimate of the cost of displacing
2 spectrum users licensed by the Commission.

3 “(c) COSTS OF RECLAIMING FREQUENCIES; APPRO-
4 PRIATIONS AUTHORIZED.—The Federal Government shall
5 bear all costs of reclaiming frequencies pursuant to this
6 section, including the cost of equipment which is rendered
7 unusable, the cost of relocating operations to a different
8 frequency band, and any other costs that are directly at-
9 tributable to the reclaiming of the frequency pursuant to
10 this section. There are authorized to be appropriated such
11 sums as may be necessary to carry out the purposes of
12 this section.

13 “(d) EFFECTIVE DATE OF RECLAIMED FRE-
14 QUENCIES.—The Commission shall not withdraw licenses
15 for any reclaimed frequencies until the end of the fiscal
16 year following the fiscal year in which the President’s noti-
17 fication is received.

18 “(e) EFFECT ON OTHER LAW.—Nothing in this sec-
19 tion shall be construed to limit or otherwise affect the au-
20 thority of the President under sections 305 and 706 of
21 the Act (47 U.S.C. 305, 606).

22 “SEC. 117. DEFINITIONS.

23 As used in this part:

24 “(1) The term ‘allocation’ means an entry in
25 the National Table of Frequency Allocations of a

1 given frequency band for the purpose of its use by
2 one or more radiocommunication services.

3 “(2) The term ‘assignment’ means an author-
4 ization given to a station licensee to use specific fre-
5 quencies or channels.

6 “(3) The term ‘commercial carrier’ means any
7 entity that uses a facility licensed by the Federal
8 Communications Commission pursuant to the Com-
9 munications Act of 1934 for hire or for its own use,
10 but does not include Federal Government stations li-
11 censed pursuant to section 305 of the Act (47
12 U.S.C. 305).

13 “(4) The term ‘the Act’ means the Communica-
14 tions Act of 1934 (47 U.S.C. 151 et seq.).”.

Mr. MARKEY. That concludes the opening statement of the Chair. We now turn to recognize the gentleman from Ohio, Mr. Oxley.

Mr. OXLEY. Thank you, Mr. Chairman and I thank you for this hearing on the issue of spectrum reallocation. It is a pleasure to be here today to hear expert testimony from our witnesses regarding the reallocation of a portion of the Federal Government's unused or underutilized radio frequency spectrum to the FCC.

I support the chairman and the other co-sponsors of H.R. 707 in their efforts to lead our country into the next century of telecommunications. With this bill Congress valiantly supports our Nation's telecommunications industries in their goal to become the standard bearers of the industry in the 21st Century.

In 1968 the FCC assigned 50 megahertz of the spectrum for cellular services. This grew into a \$4.5 billion industry in which America leads in technological prowess. Though the cellular industry is a dramatic example, it illustrates what can occur when Congress has the foresight to provide an infrastructure for development. In the same spirit today I am introducing a bill which like H.R. 707 emancipates 200 megahertz of underutilized Government spectrum. It also calls for free market spectrum distribution through competitive bidding procedures.

The present lottery system of spectrum allocation was originally created in order to expedite the assignment process, reduce the size of the bureaucracy, lower Government spending, and eliminate unnecessary regulations. However, it spawned a cottage industry of lawyers and engineers who fabricate applications meeting with the FCC requirements for the design, drawings, and financial commitments from banks. These people usually have no intention of exploring emerging technologies. Instead, they sell their free new allocation of spectrum for millions of dollars in profits, indeed, Mr. Chairman, a real crap shoot.

At a time when curative measures for the budget deficit predominates policy concerns, it seems foolish to give away a valuable resource such as the spectrum reserve. It has been estimated that the sale of 30 megahertz in the first 2 years of enactment could raise at least \$2.5 billion. Furthermore, this method would create a more efficient method of distribution and use.

First, the bill mandates that the FCC weigh the technological benefits of the new proposed applications. Second, it prohibits warehousing and speculation. And finally, the competitive bidding guarantees that the applicants will refine their proposals to yield the greatest results. This bill would not favor large companies over small, it would protect the public service uses such as emergency service of amateur radio operators from the competitive bidding process. It also exempts broadcasters from the procedures for license renewals. Mr. Chairman, I hope that we will be able to consider this legislation in the subcommittee in the very near future.

The bill before us, H.R. 707 invites the U.S. telecommunications industry to lead their international colleagues into the next century. This legislation combined with the proven methods of the free market system acts as a filter to insure that only the most competitive companies will make the most efficient use of this finite and natural resource. It also guarantees that the companies which take

advantage of the new radio waves will streamline their products for the most cost-efficient appointment of their resource.

Mr. Chairman, it is obvious that the promotion of growth through the emancipation of the underutilized airways is an idea that we could all stand behind. I hope we can make this hearing the first step in the development of American radio technology in the 21st Century.

Mr. Chairman, before I yield back I have two statements from Mr. Moorhead and Mr. Fields that I would like to be made part of the record.

Mr. MARKEY. I thank the gentleman and those statements will be included in the record at the appropriate point.

[The prepared statements of Mr. Moorhead, Mr. Fields and Mr. Synar follow:]

STATEMENT OF HON. CARLOS J. MOORHEAD

Mr. Chairman, I want to commend you for convening this hearing on and markup of H.R. 707, the Emerging Telecommunications Technologies Act of 1993. I also want to commend the full committee Chairman, Mr. Dingell, for his efforts in drafting this important legislation and working for its enactment.

This bill will free up 200 megahertz of badly needed spectrum. Commercial users, currently are limited to 60 percent of all available spectrum because the Federal Government controls the other 40 percent. Without action by Congress, this ultimately will stifle development of new and important technologies, such as wireless forms of communications.

This bill takes a balanced approach to address an urgent need. It directs the National Telecommunications and Information Administration (NTIA) to identify, over the next 2 years, 200 megahertz of Federal Government-controlled spectrum that could be assigned to non-Governmental users, as determined by the Federal Communications Commission. Without being specific, the bill also encourages the FCC, when assigning the newly available spectrum, to give preference to new, emerging technologies.

This legislation will achieve its important objective of freeing up much needed spectrum for commercial use without jeopardizing the National interest. The bill gives the President the authority to overrule the NTIA's conclusions if he believes the national interest is at risk.

Mr. Chairman, I again commend you for proceeding with this hearing and markup. I look forward to working on this important legislation as it proceeds through Congress.

Thank you, Mr. Chairman.

STATEMENT OF HON. JACK FIELDS

Mr. Chairman, I want to commend you for moving forward with this hearing and markup of the Emerging Telecommunications Technologies Act of 1993. The subcommittee, full committee, and the full house approved by voice vote nearly identical legislation last Congress. I see no reason why we can't do the same this Congress.

Today's radio spectrum resembles a metropolitan highway system: it's too congested. Although spectrum is a non-depletable resource, it also is finite. The Federal Government currently occupies 40 percent of available spectrum, leaving commercial, State, and local users to squeeze into the remaining 60 percent.

That 3 to 2 ratio worked fine for quite some time. We are now, however, in the midst of a telecommunications revolution. Technological innovations are proceeding at a rapid pace, particularly in the area of wireless communications.

As Apple chairman John Sculley pointed out at our first infrastructure hearing, transmissions that traditionally passed over wire now go through the air. That means increased use of spectrum. From cellular phones to wireless computing, wireless communications are stretching the outer limits of telecommunications innovations—and each new technology demands additional spectrum in order to flourish.

As he had done the two previous Congresses, Chairman Dingell has introduced legislation to allocate 200 megahertz of under-utilized Government spectrum to commercial users. I commend Chairman Dingell for his commitment to spectrum re-allo-

cation. This bill will ensure that valuable telecommunications innovations can flourish. More importantly, it will secure the United States position as the preeminent world leader in telecommunications.

I think it is important to stress at this point that this bill will not jeopardize our national security or our public health and safety. In the event that re-allocation could pose such a threat, the bill expressly authorizes the President to prevent the Government assignment from being withdrawn. While this bill represents a commitment to laying fertile ground for technological advances, it will not do so at the expense of national security or public health and safety.

Mr. Chairman, I also want to take this opportunity to request that we attempt to find a better solution to distributing spectrum once it has been freed up. As you know, this important legislation does not address that issue, but I hope that we can reach agreement on finding a method to replace the inefficient and inequitable lottery process. I look forward to working with you on this important matter.

In conclusion, I look forward to hearing from our witnesses today and their insights on the need for additional spectrum. I also look forward to proceeding with the markup of H.R. 707, as planned.

STATEMENT OF HON. MIKE SYNAR

Good morning Mr. Chairman and thank you for convening today's hearing and markup of H.R. 707, legislation which will free up much needed radio spectrum for private use. Emerging technologies such as HDTV, and the continuing growth of current spectrum users like cellular and mobile radio, will require larger and larger amounts of spectrum during the coming decades. This bill takes a big step toward providing that additional spectrum by requiring the Commerce Secretary to identify and recommend for commercial reassignment at least 200 megahertz of spectrum currently used by Government. The bill also sets up a number of rational, cost-effective criteria for the Secretary to follow in selecting those portions of the Government's spectrum reassignment. The criteria pertaining to the frequencies used by the Federal power agencies are especially important and I am glad to see that they have been included in the bill.

Mr. Chairman, I strongly support H.R. 707 and I look forward to its quick passage.

Mr. MARKEY. I can say that I am committed to working with all members on the subcommittee to create a mechanism that distributes spectrum fairly, efficiently, and serves the public interest. As many of you know, back in the early 1980's I opposed the initiation of the lottery system and I have long called for reform of the lottery process. I have also come to believe that it may make sense to raise revenues from utilization of the spectrum to help fund the FCC and for other important communications purposes, but many complex questions are raised by these issues and I want to explore all of these issues before we move forward.

So I want to commend the gentleman from Ohio for raising these issues and I appreciate his commitment in keeping this bill on a track that will move it to passage and signature soon, while at the same time we deal in a comprehensive fashion with the related issues which this subcommittee will focus on in the future. So I appreciate his comments and I think on this particular issue we have a real opportunity to find common ground before the end of the year.

Does the gentleman seek recognition for the purpose of making an opening statement?

Mr. HASTERT. No.

Mr. MARKEY. Does not. That completes opening statements by the members. We will now turn to our panel and it is a very, very distinguished panel today. We request of the panelists that they keep their opening statements to no more than 5 minutes. Please give us your best presentation within that limited timeframe. We

will begin then with Mr. Edward Fritts who is the president of the National Association of Broadcasters, a frequent visitor to this subcommittee over the years. We welcome you back, Eddie, and whenever you feel comfortable, please begin.

STATEMENTS OF EDWARD O. FRITTS, PRESIDENT, NATIONAL ASSOCIATION OF BROADCASTERS; PAUL KOZLOWSKI, VICE PRESIDENT, DIGITAL EQUIPMENT CORP.; RONNIE RAND, EXECUTIVE DIRECTOR, ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS; THOMAS E. WHEELER, PRESIDENT, CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION; AND ERIC J. SCHIMMEL, VICE PRESIDENT, TELECOMMUNICATIONS INDUSTRY ASSOCIATION

Mr. FRITTS. Thank you, Mr. Chairman, and members of the subcommittee. We have a formal statement we would like to include in the record, but I will very briefly abbreviate that.

Mr. MARKEY. Without objection all of the formal statements of all of the witnesses will be included in the record at the appropriate point.

Mr. FRITTS. Mr. Chairman, we believe that your preamble statement for the record is clearly on target and certainly we endorse H.R. 707, the bill before your subcommittee today.

This transfer of spectrum from the Government to commercial and private use, we feel, will achieve many positive goals, including access to the spectrum for new technologies. Now, some have suggested that the Government should use auctions to assign this new spectrum once it is available. We have long opposed any proposal to authorize auctions for broadcast spectrum. The assignment of broadcast spectrum should be determined, we feel, by sound public policy, not by who has the most money. Spectrum auctions for broadcast are contrary, we believe, to the public interest.

Having said that, let me comment on two spectrum-related issues which are pending before the FCC which we believe you members of the committee will be interested in. One of those is digital audio broadcasting or DAB. As you know, broadcasters are working to develop a terrestrial DAB system that is locally based and spectrum efficient in order to upgrade our current broadcast service. Yet the FCC is now getting ready to wreak havoc on our American radio system with a plan to dump 30 to 60 additional channels of audio into every market via satellite-delivered DAB.

Just a few months ago the commission began dealing with the problem of too many radio stations with a modest relaxation of its ownership rules, but following up that positive action by approving new satellite DAB will do more to hurt our community-based radio system than anything I can possibly imagine and they will be doing it without any consultation with you, the subcommittee. This subcommittee should hold hearings on this ill-conceived idea that runs completely counter to the public interest and we hope you will consider doing that.

The other subject I would like to touch on is the timetable for establishing high-definition television service. We soon will have an HDTV standard recommended to the FCC. Now, once that occurs broadcasters can begin the expensive process of applying for spectrum and then converting their station, the high-definition tele-

vision. Estimates run as high as \$10 million per station or more to convert fully to this new technology. Regrettably the FCC is looking at an overly-ambitious timeframe for implementing HDTV. Given the current economic realities of our business, we believe that broadcasters need more flexibility to convert to digital broadcasting, otherwise, we may see a scenario where stations simply cannot afford to upgrade their operations in the time which has been allocated by the FCC. And thus, the high-definition television system may never reach its full potential.

We urge you and your colleagues to direct the Commission to give broadcasters to take this time to make the transition to HDTV in an orderly consumer-responsive and fiscally sound manner.

Again, Mr. Chairman, we endorse the bill before the committee today, H.R. 707. We appreciate the opportunity of being able to testify on its behalf. Thank you.

Mr. MARKEY. Thank you, Mr. Fritts, very much.

[Testimony resumes on p. 44.]

[The prepared statement of Mr. Fritts follows:]

WRITTEN TESTIMONY

OF

**MR. EDWARD O. FRITTS, PRESIDENT & CEO
NATIONAL ASSOCIATION OF BROADCASTERS**

Thank you, Mr. Chairman, for the opportunity to testify here today. I am Edward O. Fritts, President and Chief Executive Officer of the National Association of Broadcasters (NAB), which represents those who own and operate America's radio and television stations, including most major networks.

When this subcommittee first began considering legislation that would re-allocate government-held spectrum, we were pleased to provide comments to your panel which gave this legislation our unqualified endorsement. I am pleased to be here today in-person to voice our support again for this legislation.

The telecommunications world has literally exploded with new and exciting technologies. Cellular phones -- personal communications services -- data broadcasting -- all these technologies and more promise a new world full of new access to information through communications and economic benefits to all Americans. In addition, public safety agencies, such as police, fire and rescue units, are seeing increased needs as well for more and better communications to help save lives and fight crime.

But with these competing needs and applications comes the demand to dole out carefully the available electromagnetic spectrum that these technologies must have to operate. And as has become abundantly clear, we are running out of room on many existing bands for including these and other new services desired or demanded by consumers.

Two years ago, we joined with this subcommittee in supporting H.R. 531, legislation introduced by House Energy and Commerce Committee Chairman John Dingell. That legislation would re-allocate approximately 200 MHz of government-held spectrum over to the FCC for commercial and private use. That legislation received the support of the vast majority of members of this panel and eventually passed the House. Unfortunately, companion legislation failed to move through the Senate. But we remain confident that with the demand for spectrum even greater now, your subcommittee will be successful this Congress in enacting such legislation into law.

In my remarks today, I want to lay out why this legislation is important to broadcasters. I want to address a related issue about a concept which we vehemently oppose -- using auctions to assign broadcast spectrum. And I want to talk about two spectrum-related issues which the FCC is considering and which you should be aware of -- the problems with satellite-delivered digital audio broadcasting (DAB) and the potentially premature implementation of high-definition television (HDTV).

Broadcasters Support Spectrum Legislation

As stated, broadcasters and other current spectrum users are aware of the demands for the electromagnetic spectrum. With so many competing uses, we face denying to the American public some particularly new and desired services unless we can provide this additional band space.

The legislation which your subcommittee is considering, H.R. 707, does just that. By providing for the re-allocation of 200 MHz of spectrum to commercial and private use, we will ensure that technologies whose usage would benefit the American people will be able to flower and prosper in the years ahead. Personal communications systems, data broadcasting or other information systems are just a few examples. At the same time, we will help prevent interference on existing broadcast or other spectrum which can occur when competing uses are too closely assigned, thus providing broadcasters and other users a benefit. In addition, broadcasters will have increased needs ourselves for additional spectrum for newsgathering and program relay purposes.

Broadcasters Oppose Spectrum Auctions

In any discussion of future assignments of spectrum, there are some who raise the issue of how best to make those assignments.

As broadcasters, whose "contracts" with the Federal government have traditionally involved providing public service in exchange for our licenses to operate free of interference, we are totally opposed to any proposal which might entail using auctions, lotteries or some other financially-driven method to allocate broadcast spectrum.

From its very inception, the FCC has had a mandate to license broadcast stations in the "public interest, convenience and necessity."¹ This system allows the FCC to oversee the use of the airwaves with minimal intrusion into the actual content of the programming provided by broadcasters. As such, the system works to the benefit of both broadcasters and the public. Broadcasters provide local news, local weather bulletins, public affairs and public service programming, reduced-price political ads for candidates, and other services to the public free of charge. In exchange, broadcasters receive the opportunity to operate radio and TV stations with great flexibility and little intrusion into programming content. They also receive a reasonable expectation of license renewal if they maintain a record of public service during their license period.

Throughout its history, the FCC has recognized the unique qualities of radio and TV broadcasters, and has awarded broadcast licenses with an eye toward ensuring that those licensees serve the public interest. The Commission traditionally has tested applicants for its broadcast licenses to determine their fitness. The FCC also has worked to balance properly the need to provide opportunities for minorities and other under-represented persons to obtain FCC broadcast licenses with the obligation to license all applicants fairly. Using minority preference, tax certificate and distress sales policies, the Commission helps provide diversity in ownership and programming.

¹Public Law 73-416, Section 303.

But spectrum auctions would allow only those individuals with significant resources to have the opportunity to acquire spectrum licenses. There would be little or no opportunity to test the fitness of applicants, since the overwhelming criteria instead would be the applicant's financial status. And the FCC's attempts to increase opportunities for minorities or other groups would be severely restricted. In a world of auctions, only those who already have large financial backing would have a real chance to win licenses, and I fail to see how that situation assures that the nation's broadcast service continues to serve the needs of our citizens.

Clearly, at least as far broadcast licenses are concerned, we are unalterably opposed to any system that would turn the granting of a broadcast license to serve the public interest into a prize to be won by the highest bidder. If this subcommittee seriously wants to include an auction provision as part of this legislation, we would urge you to create a specific exemption for broadcast spectrum from such an auction process.

The Threat to Localism of Satellite DAB

Mr. Chairman, this subcommittee has demonstrated leadership over the past several years in helping to address a chronic problem facing the American radio industry. Hearings on the problems facing AM radio, as well as your concerns about radio ownership issues, have given you and your colleagues a good feel for the uncertain times we now face in radio.

We begin with the fact that the United States has, without question, the greatest and most diverse locally-based radio system in the world. It is the envy of the world. At our annual conventions, thousands of international visitors come each year in increasing numbers to learn about the excellence of the American radio system and how they can try to recreate that system in their own country.

But while we have a radio system of which all of us can take great pride, it is a system that is hurting -- and hurting badly.

Over the past ten years, the FCC has added, through various dockets, over 2,000 new radio stations to the American radio dial. We now have over 11,000 radio stations serving the U.S., one station for every 22,000 people. Compare that with Canada, which has only one station for every 50,000 people, or with Mexico, which has one station for every 92,000 people.

With all these new stations signing-on, the number of radio stations has now reached the saturation point. Last year, for the first time in our history, more than half of all commercial radio stations lost money.

Yet even while the economy is slowly improving and some consolidation within our industry continues, we face a new threat -- one which is blindly driven by misguided policy, not by economics, consumer demand or need. It is satellite-delivered DAB, and I believe it is the single greatest threat facing locally-based American radio.

Already, the FCC is giving serious consideration to an application for a new satellite DAB service by a fledgling company called "Satellite CD Radio."² Indeed, the Commission has already proposed an allocation of spectrum for this service.³ This service proposes to deliver 30 to 60 new channels of audio service to homes, businesses and cars in every market in the country. But think about it -- that's like adding 30 to 60 new radio stations into every market, stations that have no obligation to serve the local needs and interests of their listeners. Could it be that the FCC has such a short memory?

Just a couple of years ago, the Commission recognized that the overpopulation of radio stations had to stop -- or stations would simply go out of business on their own. That is why the Commission approved expanding the duopoly rule, so that some consolidation could bring economies of scale back to the radio business. Indeed, the Commission's careful relaxation of these rules just last year was in response to the overcrowding conditions on the radio dial, and was done so that local stations can sustain their economic viability.

Yet now, that same Commission is considering a request to authorize the creation of satellite DAB services --- a new audio service that will only do even further damage to the locally-based, locally-supported radio service Americans depend on. This new proposal is not about new DAB technology -- it is about additional radio by satellite.

²Five other applications have already been filed for satellite DAB. The Commission has not yet accepted those applications for filing.

³FCC MM Docket No. 90-357.

NAB has long been in strong opposition to satellite DAB transmission. We do so for one simple reason -- because it undermines the whole concept of localism on which American radio is based.

Any decisions on allowing deployment of digital audio broadcasting must take into consideration the impact of such services on existing radio broadcasters and their listeners. It is those broadcasters who have worked tirelessly to serve the American people for 70 years. It is those local radio stations that provide the local news and other programming that no national satellite-based DAB service can ever hope to provide. Yet here we are, facing what could be the death sentence for the very system of local radio that the rest of the world is trying so hard to emulate.

The Communications Act of 1934 is based on the bedrock principles of localism and diversity. Yet allowing one or two large national satellite DAB companies to control delivery of 30 to 60 channels in each market is a total contradiction to those principles. Where is the fairness of such a sweeping market change? How does it serve the public interest to replace thousands of radio stations with one or two national ones?

Satellite radio is certainly not local, and such a service is not diverse, either, since all 30 or 60 channels carried on a satellite service could all be owned by the same person or company. If the government wants to move forward with satellite DAB, then it should change

its long-held policy about localism and diversity. But it should do so for sound policy reasons, not simply because a new technology has arrived.

NAB is not saying "no" to DAB service, or to ever allowing satellite DAB to occur. What we are saying is that we do not understand how public policy will benefit by allowing satellite DAB to begin before existing radio broadcasters have the opportunity to provide the same quality of service through a locally-based, terrestrial DAB service. And certainly, before any DAB service begins, either with existing or new technology, the FCC must develop a coherent radio policy, both technically and legally.

In fact, work is rapidly progressing on just such terrestrial systems. DAB systems are now under development which will provide listeners with greater fidelity and less interference than ever before imagined. These systems are being designed to operate in the existing AM and FM radio bands, on the same channel as the existing radio stations, where they will promote the efficient use of spectrum. CD-quality audio has the potential to revolutionize the American radio industry, while also furthering our goal to serve the public interest.

But the FCC must not be allowed to rush to judgment. Before it is a request from Satellite CD Radio to allocate frequencies in the 2310-2360 MHz band for satellite DAB service. We have filed a strenuous objection moving ahead with satellite DAB, and I call upon you, Mr. Chairman, and your colleagues to voice similar concerns.

We should not be leaping head-long into authorizing a new satellite DAB service when the FCC itself has not even developed its own philosophy about where we should go and how we should proceed.

Concerns About The Timetable for HDTV

As we move from the current over-the-air system of analog television signals to one of high-definition digital TV, we must maintain the flexibility needed to provide the added spectrum for this new technology.

As your subcommittee knows, we are getting very close to having an HDTV standard recommended to the FCC. The Advanced Television Test Center in Alexandria, VA, has completed its initial testing of five different HDTV systems, and the Advisory Committee on Advanced Television Service set up by the FCC plans to recommend a standard to the Commission later this year. Once that standard is selected, broadcasters, program producers and others will be able to begin the process toward moving us from our current NTSC standard to HDTV.

While all of us are excited by the prospects of this advancement for the American television viewer, we remain concerned about the timetable which the FCC has laid out for implementing the new standard. We also are concerned about the proposal to place all HDTV frequencies within the current UHF TV band, as opposed to both UHF and VHF.

Mr. Chairman, digital HDTV transmission works. Not too many years ago, we did not think that HDTV would even be possible in our spectrum and certainly not in a narrow channel. But today, thanks to digital technology, we will soon be able to offer HDTV. And since we will be using digital means to deliver the signals, we can also offer other types of broadcasting -- broadcasting to new digital receivers, computers, pagers, and digital devices that have not even been invented yet. The possibilities are limitless.

Yet this technology does not come without considerable start-up costs, as you would have with any new transmission system. Some estimates put the total cost of upgrading transmitters, cameras and related hardware at upwards of \$10 million. And that is \$10 million per station -- in both big markets like New York and Boston, and in small markets. Given the continued financial difficulties many TV stations are continuing to face⁴ (even with a slowly improving economy), we believe it is important that the FCC give broadcasters some flexibility in making the transition from NTSC to HDTV.

Remember, too, that viewers must begin purchasing new sets to view the enhanced picture quality that HDTV will provide. That process, as with the transition from black-and-white to color sets, will not happen overnight.

⁴One quarter of all network affiliated TV stations lost more than \$477,000 in 1991. One half of all independent stations lost more than \$314,000, with one quarter losing over \$1.6 million. One half of all UHF stations lost more than \$268,000, with the average UHF station losing \$525,000. 1992 NAB Television Financial Report, Washington, D.C.: National Association of Broadcasters, 1992.

At this point, the Commission is considering giving stations just three years to apply for a reserved frequency after the HDTV standard is selected. It also is looking at requiring stations to initiate some kind of HDTV service within six years, and to give up their current NTSC channel at the end of 15 years.

We believe that with so many market forces at work and with the television industry still trying to climb out from under the recession, the Commission should give broadcasters more time to make an orderly transition of this magnitude. Otherwise, we face the possibility that many stations will not fully utilize this new technology, and the losers will then be the American people.

In addition, we question the FCC's notion that all the HDTV frequencies eventually be placed within the current UHF band. This preliminary view is disturbing for a number of reasons.

First, placing most of the HDTV signals within the UHF band will lead to smaller HDTV service areas, more interference with the current NTSC signals now operating in the UHF band, and substantial cost penalties to stations allotted a VHF HDTV channel during the interim period between when they begin transmitting in HDTV and when the all-UHF rule would take effect. For these reasons alone, such a scheme is not acceptable and the Commission's proposal should be discarded.

In addition, based on filings at the FCC by equipment manufacturing interests, there would be only a negligible benefit to consumers in cheaper receiver costs from having all HDTV signals in one band. Indeed, given that the VHF band will be used during the transition period, tuners sold during that time will, of necessity, be required to have VHF HDTV capability. If that is the case, then why not leave those VHF stations in the VHF band permanently once HDTV is the sole transmitting source?

Flexibility in how the HDTV channel can be used is also a critically important issue to broadcasters. The FCC Advisory Committee acknowledges that ancillary use of the HDTV signal for such ventures as data transmissions and alternative audio and video programming offers broadcasters the prospect of additional revenue streams with which to defray the startup costs of converting to HDTV. Given the financial difficulty facing many stations, these ancillary opportunities to bring in additional revenue may be a critical factor in helping speed the transition to HDTV. If enough flexibility is provided for higher data rate broadcasting, for example, consumers also would see an explosion of new products, which would provide them with an added benefit as well.

Mr. Chairman, all of us look forward to the day when HDTV will be a reality, and that day will come if broadcasters are given the ability to make a reasoned transition from NTSC to HDTV. But I want your subcommittee to understand that if the FCC goes ahead with its preliminary timetable for HDTV implementation, we face a scenario where there will be a system available but few, if any, willing to invest the resources needed to get it up and running. And that would be a travesty of the highest magnitude.

Summary

In conclusion, Mr. Chairman, let me review briefly what I have said here today.

First, NAB enthusiastically endorses H.R. 707, and we urge you to move this bill as quickly as possible. The demand for spectrum necessitates that you take this action on the behest of all Americans and all spectrum users.

Second, we reiterate our belief that the use of auctions to assign broadcast spectrum is counter to the public interest. We would urge you to make sure that broadcast spectrum is exempt from any auction proposals.

Third, we are concerned about the prospect of satellite-delivered DAB destroying the world's greatest system of commercial, locally-licensed radio stations, and/or impeding the successful introduction of DAB by the terrestrial radio services. We urge you to join us in opposing any attempt to authorize such a system until the FCC has come to grips with the need to develop a fair and comprehensive plan for moving from current radio broadcasting to DAB.

And finally, we raised some serious concerns that the FCC might make deployment of HDTV less than successful. We believe that broadcasters should be given as much flexibility as possible in making the transition from NTSC to HDTV. We also believe that the notion of placing all HDTV signals within the current UHF band is unworkable, unwise and not in the public interest. We would urge you to join NAB in calling for a prudent timetable for rolling out this new technology for the benefit of all TV viewers.

As always, I appreciate the opportunity to testify on these issues here today, and I look forward to answering your questions.

Mr. MARKEY. Our next witness is Mr. Paul Kozlowski who is Vice President of the Communications, Education, Entertainment, and Business Unit of the Digital Equipment Corporation. Welcome, sir.

STATEMENT OF PAUL KOZLOWSKI

Mr. KOZLOWSKI. Thank you, Mr. Chairman. I am Paul Kozlowski, Vice President of Digital Equipment Corporation's Education, Communication and Entertainment Unit, appearing today on behalf of the Computer and Business Manufacturers Association, CBEMA. CBEMA represents the leading U.S. providers of information technology products and services.

I appreciate the opportunity to tell the subcommittee why the timely availability of radio spectrum for new technology is critical to the U.S. information technology industry. CBEMA members support your initiative in conjunction with Mr. Dingell to provide the availability, Mr. Chairman, and ask that the subcommittee take action in concert with you to help put domestic communications and information businesses on a straight track toward world leadership and the new technologies.

CBEMA members know the allocation of frequencies for wireless personal communication services or PCS is a move towards stronger domestic industries and upgraded educational practices.

The emerging technologies that we call "user PCS" devices will encompass a broad range of consumer and business products including improved residential cordless phones, wireless local area computer network, wireless PBX office systems, campus-wide voice and data systems, and many more services. They are designed to provide the user public with safe, secure, and affordable technology that allows them to handle any kind of information or wireless networks: files, numbers, voice images and even books.

The service industries already account for 52 percent of the U.S. GNP and we are steadily growing more dependent on their contribution to our national well-being. With PCS technologies, we have an opportunity to increase dramatically the efficiency of those industries by increasing users' ease of access to information and facilitating communications between decisionmakers. In the near term the U.S. market for user PCS is worth an estimated \$100 to \$200 billion, representing tens of thousands of jobs.

In terms of domestic and foreign sales of U.S. goods, the United States also stands to gain enormously. The United States is ahead in technology, in development of PCS technologies, and has an opportunity to assume market share as well as be a leader in setting standards for the developing technologies. We are waiting to have the spectrum allocated to cultivate a home market and take the lead.

Japan and Europe have moved toward wireless networks already and it does not serve our economy or our society to stay behind them.

The FCC recently has proposed an allocation of 200 megahertz between 1910 and 1930 for this new technology. Although the FCC proposal is a laudatory and essentially transitional measure for user-PCS, it is an insufficient amount of frequency to implement the full range of advanced user PCS technologies and thus to fulfill the best promise of user-PCS. With swift measures by Congress to

free additional spectrum for new telecommunications technologies and services, including additional spectrum for User-PCS are critical.

Mr. Chairman, time is of the essence. Emerging computer technologies, off-shore competition, and user requirements will not wait. We must speed up the process of identifying the frequencies to be reallocated from the Federal Government. We must speed up the process of allocating and assigning those frequencies once they are under the aegis of the FCC. In this worthy effort, you, the administration, NTIA, and the FCC have CBEMA's pledge of assistance.

One final note, this statement represents the consensus of the CBEMA members and the fundamental issues related to the spectrum allocation for user-PCS. My response in technical or policy details during the question and answer period, however, are from Digital Equipment's perspective only. Thank you for your consideration.

Mr. MARKEY. Thank you, Mr. Kozlowski, very much.

[The prepared statement of Mr. Kozlowski follows:]

Statement of
Computer and Business Equipment
Manufacturers Association (CBEMA)
Presented by
Paul Kozlowski, Vice President
Communication, Education
and Entertainment Business Unit
Digital Equipment Corporation

Introduction

Mr. Chairman and Members of the Subcommittee, I am Paul Kozlowski, Vice President of Digital Equipment Corporation's Communication, Education and Entertainment Business Unit, appearing today on behalf of the Computer and Business Equipment Manufacturers Association (CBEMA). CBEMA represents the leading U.S. providers of information technology products and services. CBEMA members had combined sales of \$225 billion in 1991—nearly five percent of our gross national product. They employ a million people in this country, and are responsible for 21 percent of all of the research and development that is funded by U.S. companies.

I appreciate the opportunity to tell this Subcommittee why the timely availability of radio spectrum for new technologies is critical to the U.S. information technology industry. CBEMA members support your initiative in conjunction with Mr. Dingell to provide that availability, Mr. Chairman, and ask that the Subcommittee take action in concert with you to help put domestic communications and information businesses on a straight track toward world leadership in the new technologies.

CBEMA's Position

CBEMA and its members have been involved with ongoing industry and Federal Communications Commission efforts to allocate frequencies for a new class of unlicensed wireless personal communications services (PCS). CBEMA supports the FCC in expeditiously deciding on an equitable allocation of frequencies. The FCC was established by Congress as the federal government's expert agency in dealing with the highly complex and technical nature of spectrum allocation and should be directed to accomplish its mission.

The Function in U.S. Education, Business and Society of the New PCS Technologies

The emerging technologies that we call "user PCS" devices will encompass a broad range of consumer and business products including improved residential cordless phones, wireless local area computer networks, wireless PBX office systems, and campus-wide voice and data systems. They will use low-power, high-capacity, high-efficiency digital transmission technologies to achieve high-speed data and high-quality voice and imaging communications between and among people using personal computers or lightweight handsets. Designed to provide the user public with safe, secure and affordable technology, they will make it possible for individuals to handle any kind of information over wireless networks—files, numbers, voice, images, even books.

User PCS will help fulfill the need for communications coverage over areas where teachers and students are physically separated, where people in business need to exchange information quickly, and where consumers on the move need to interact, transmit, and receive information cheaply and efficiently. The number of potential benefits from PCS devices, which could be provided by any manufacturers, are limited only by creativity. They could, for example, provide communications

- among many people working together on a report;
- among teachers and students in a classroom or campus;
- between a doctor and her file of x-rays; or
- from a scientist to a network "gateway" that connects him to a national data network.

Significance of PCS to the United States Economy

The services industries already account for 52% of the U.S. GNP and we are steadily growing more dependent on their contribution to our national well-being. They are highly dependent on information technology for operational and productivity improvement; with PCS technologies, we have an opportunity to increase dramatically the efficiency of those industries by increasing users' ease of access to information and facilitating communications between decision-makers. In the near term, the U.S. market for user PCS is worth an estimated \$100-\$200 billion, representing tens of thousands of jobs.

In terms of domestic and foreign sales of U.S. goods, the U.S. also stands to gain enormously. The U.S. is ahead technologically in the development of PCS technologies and has an opportunity assume market share as well as be out front in setting standards for the developing technologies. We are just waiting to have the spectrum allocated to cultivate a home market and take the lead.

Finally—but not last in terms of importance in any discussion of economic strength—the advantages of user-PCS -data applications to education are profound. As teachers move students among reading, math, and writing groups, user PCS will eliminate the need for hard-wiring among computers, saving significant time and funds. The possibility of free network configurations will enable the kind of spontaneous interactions that are the hallmark of learning.

Technical Considerations Related to PCS

The FCC recently has proposed to allocate 20 MHz—between 1910 and 1930 MHz—for this new technology. While a step in the right direction, this is clearly

only a first step. Swift measures by Congress to free additional spectrum for new telecommunications technologies, including additional spectrum for User-PCS, are critical.

As conceived by CBEMA, a user-PCS radio service in this band would

- be accessible to users without imposition of licensing obligations, network connection fees, or air-time charges;
- be open to any manufacturer's products and any network access and usage scheme that complies with the regulatory requirements;
- be regulated in a manner that assures non-discriminatory access to assigned frequencies by compatible devices for like purposes; and
- have flexibility built into the initial regulatory scheme to encourage innovation in and the evolution of user PCS and the devices that deliver them.

Many others in our industry, as well as a wide variety of private and public sector groups, have supported this concept of user PCS.

The Nature and Meaning of Congressional Action

Thus, user PCS underscores the need for congressional action to release new spectrum for emerging telecommunications technologies. User PCS, in fact, embodies the goals to be served by the "relative worth" analysis included in prior spectrum reallocation bills, which pointed decision makers in the direction of the following:

- devoting frequencies to new, spectrum-dependent technologies that would not exist but for those frequencies;

- making frequencies available for technologies that will increase the productivity and efficiency of the United States' public and private sectors;
- using our spectrum resources in a manner that will foster U.S. competitiveness in the worldwide marketplace; and
- providing safety and security measures and capabilities for the populace.

CBEMA strongly urges this Subcommittee to consider legislation, as it did last session, that would require government spectrum managers to determine whether a particular spectrum use promotes the development and use of new communications technologies. User PCS provides a striking example of such a use, since it is born of converging developments in the personal computer and telecommunications worlds. These developments include:

1. The increasing mobility requirements of today's users. Today, portable and lap-top computers represent a large segment of new computer utilization.
2. The vastly increased requirement for higher speeds and greater bandwidth, not only to move more information over digital communications networks, but also to move qualitatively-different kinds of information—particularly facsimile, graphics and, soon, higher resolution images; and,
3. The rapid growth of networked personal computers. Computer networking and the services supported by such networks, such as electronic mail, are rapidly becoming highly important productivity tools for American businesses. For example, from the end of 1989 to the end of 1990, the number of local-area-network-based electronic mailboxes doubled; from 1990 to 1995, the number is expected to increase by an order of magnitude. As another example, more than 70 percent of Macintosh computers are connected to communications networks. The value-added features provided by networks are becoming the reasons that people use personal computers.

To exploit these converging developments, the communications capability of the U.S. infrastructure must reorient itself to reflect portability as a paramount goal. Portability, in turn, requires new spectrum. This need did not exist five years ago. Five years from now, the new user PCS technology to serve this need will be as ubiquitous and as indispensable as the personal computer is today.

Recommendations

In addition to the initiatives supported above, CBEMA recommends that any proposed legislation to provide new spectrum opportunities for emerging telecommunications technologies must impose a "but for" test—that is, but for use of the radio spectrum, would this technology be possible? Are there alternate means, particularly non-spectrum dependent means—to provide the same service; and are there alternative frequency allocation, already made, that can be used for this service?

Given the requirement for portability and mobility of the communications networks that must serve small, low-power handsets and laptop and notebook-sized personal computers, CBEMA concluded that wired and infrared local area networks were not feasible for the long-term and that user PCS requires a new frequency allocation.

There are, at the present time, no regulatory-permitted technologies and no other radio services that can be used to create the shared electronic space necessary for user PCS. No existing technology or service—whether cellular telephone networks, SMR-based mobile data networks, or the newly proposed voice personal communications services—can assure consistent, economic, high-quality, high-capacity user PCS in a spectrum-efficient manner.

International Competitiveness

Information and communications technology has long been the United States' competitive edge in world markets. However, this U.S. leadership is being challenged, notably Japan and Europe, and particularly in the fast-growing portable computer and portable voice communications market segments. Since user PCS is a next step in the evolution of the communications infrastructure, the U.S. industry must be the first to develop these new technologies in order to hold on to its world leadership position.

Previous measures to provide additional spectrum for emerging telecommunications technology made the finding that the availability of frequencies for certain uses affects the international competitiveness of the U.S. economy and required consideration of "the activities of foreign governments in making spectrum available for experimentation on commercial components in order to support their domestic manufacturers of equipment." This is a key criterion for user PCS as well.

Conclusion

As Chairman Markey noted upon the introduction of H.R. 531 in the 102nd Congress, that bill would "reallocate additional radio spectrum to ensure that the United States fully invests in its technological future," thus providing economic growth and world leadership in this area. CBEMA and others in the computer industry strongly support that goal—it is also our goal in proposing an adequate frequency allocation for user-PCS. But Mr. Chairman, time is of the essence. Emerging computer technologies, offshore competition and user requirements will not wait. We must speed up the process of identifying the frequencies to be reallocated from the federal government. We must speed up the process of allocating and assigning those frequencies once they are under the aegis of the FCC. In this worthy effort, you, the Administration, NTIA, and the FCC have CBEMA's pledge of assistance. Thank you.

Mr. MARKEY. Our next witness is Mr. Ronnie Rand, the Executive Director of the Associated Public-Safety Communications Officers, Incorporated, here from South Daytona, Fla. Welcome, sir.

STATEMENT OF RONNIE RAND

Mr. RAND. Thank you, Mr. Chairman. Chairman Markey.

Mr. MARKEY. Welcome again. Were you here before, sir?

Mr. RAND. We have visited before.

Mr. MARKEY. Yes, I thought so. Welcome.

Mr. RAND. Chairman Markey and distinguished committee members, it's certainly a pleasure to be invited to discuss H.R. 707. I am APCO's Executive Director. APCO, which is our acronym, is a primary voice for State and local government. Our membership which is nearly 10,000 strong represents police, fire, emergency medical, forestry, highway, and other public safety agency throughout the Nation.

APCO has testified on this and other matters at numerous times in the past. We certainly hope that this legislation is enacted and it will be the last time that we find it a requirement to testify on this particular issue.

I would certainly like to commend you, Mr. Chairman, and Chairman Dingell for the development of this bill, for the perseverance you've shown, for standing firm against alternative proposals which include those of selling this spectrum to the highest bidder.

Public safety definitely needs more spectrum. A 1985 FCC study estimated public safety needs through the year 2000. In 1992 we had already exceeded those needs by 70 percent—those projected needs. So only a fraction of our needs have been addressed with additional spectrum even though we have exceeded their projection by 70 percent already. We certainly support new technology. Public safety is a greater user of new technology. They can be used for maps, video, fingerprints, mug shots, full-duplex medical services, and smart highways, among other things. We strongly support this bill in its present form without auctions.

Our concern on auctions is even if public safety were exempt it might leave us with only that portion of the spectrum that is least usable and least valuable. For police, fire, emergency medical services, and others we must have good usable spectrum but we are very pleased with the language in the bill which ensures public safety participation in the planning and reallocation process. And once again, we appreciate the identity of the top priority for public safety services. But the auction issue, if it appears, we feel like it is kind of like Ford Motor Company, if they have a Lincoln and Pinto to sell they must sell one and must give one away, which one do you think they are going to give to public safety. So we are really concerned.

Mr. MARKEY. Not the Pinto. I mean, that is truly an oxymoron, Pinto and public safety.

Mr. RAND. We feel like we would get the Pinto if it were auctioned. And we want to thank you very much for this opportunity, Mr. Chairman and we stand ready to address any questions that you might have.

Mr. MARKEY. Thank you, Mr. Rand. You have a lot of friends in this committee.

[The prepared statement of Mr. Rand follows:]

Testimony of
RONNIE RAND, EXECUTIVE DIRECTOR
ASSOCIATED PUBLIC-SAFETY COMMUNICATIONS OFFICERS, INC.

Before the
U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON ENERGY AND COMMERCE
SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE
REGARDING H.R. 707
THE EMERGING TELECOMMUNICATIONS TECHNOLOGIES ACT OF 1993
February 4, 1993

Thank you Mr. Chairman for the opportunity to appear before you today to discuss your bill, H.R. 707, the Emerging Telecommunications Technologies Act of 1993.

My name is Ronnie Rand. I am the Executive Director of Associated Public-Safety Communications Officers, Inc. ("APCO"), the nation's largest and oldest public safety communications organization. APCO's nearly 10,000 members are involved in the management and operation of radio communications systems for police, fire, local government, emergency medical, forestry conservation, highway maintenance, and other public safety services. Until last August, I was the President of APCO, and had served for 16 years as Manager of the Office of Emergency Services for the City of Little Rock, Arkansas.

Representatives of APCO have testified on numerous occasions in support of legislation to require the Federal Government to release valuable radio spectrum for reallocation to

state and local government public safety agencies.^{1/} We join with you, Mr. Chairman, in hoping that, this year, such legislation will finally be enacted, and that our testimony on this issue will no longer be necessary.

On behalf of APCO, I also want to take this opportunity to praise you and Chairman Dingell for your perseverance on this important issue, and for again including provisions recognizing the special needs and special status of public safety.

Public Safety Agencies Need More Radio Spectrum

Radio communication is an indispensable tool for police, fire, emergency medical, forestry conservation, highway maintenance and other public safety agencies. Without radio communications, it would be impossible for an ambulance, police cruiser or fire truck to arrive within minutes at an accident, crime scene or fire. Mobile and hand-held portable radios (and, increasingly, mobile data terminals) are critical for coordinating virtually every conceivable type of activity related to the protection of life and property. The general public and thousands of police officers, firefighters and other public safety personnel are placed in potentially life threatening situations every day that require rapid, interference free mobile and portable radio communications.

^{1/ See, e.g.,} Testimony of Chief William Bratton before the House Subcommittee on Telecommunications and Finance Regarding H.R. 531 (February 21, 1991); Testimony of Sheriff Sherman Block before the House Subcommittee on Telecommunications and Finance Regarding H.R. 531 (March 12, 1991); Testimony of John W. Carmody before the Senate Subcommittee on Communications Regarding S.218 (April 11, 1991).

Public safety agencies' demand for radio communications is growing dramatically. As population and population density increases, so does crime, the danger of uncontrolled fires, traffic congestion, emergency medical needs, and other threats to the safety of life and property. Unfortunately, state and local government public safety agencies are faced not only with growing demands for their services, but also with tightening budgets that stretch their manpower and facilities. The result is greatly increased reliance on radio communications, which, therefore, requires more and more dedicated public safety radio frequencies.

The current demand for public safety radio spectrum has far exceeded prior estimates. In 1985, the FCC released an extensive study projecting public safety needs through the year 2000.^{2/} The study estimated that, by 1992, there would be over 285,000 public safety radio stations.^{3/} In fact, as of November 1992, there were already 483,424 licensed public safety stations, 70% more than had been projected.^{4/} The Commission's estimates also did not account for more recent public safety radio spectrum uses, such as mobile data terminals. APCO estimates that there are already nearly 300,000 licensed public safety mobile data terminals in use, and most jurisdictions have yet to acquire such equipment.

Future technologies now being developed will require even greater radio spectrum allocations for public safety. These

2/ Future Public Safety Telecommunications Requirements, PR Docket 84-232, FCC 85-329 (released August 1, 1985).

3/ Id. at 50 (table 18) (excluding Special Emergency Service). See Table 1 attached hereto.

4/ See Tables 1 and 2 attached hereto.

technologies include the ability to transmit maps, criminal records, mug shots, finger prints, hazardous materials information, building diagrams and other similar data between base stations and mobile units in the field. Video also promises to be an important tool for public safety agencies, including video surveillance, on-scene coordination by fire and police departments, and record-keeping capability. So-called "smart highways" providing constant real-time traffic flow, road condition and accident information to public safety agencies will also require radio frequencies not currently available.

Unfortunately, current spectrum allocations are grossly insufficient to meet these growing public safety radio spectrum demands. There is already a serious shortage of public safety radio frequencies in major metropolitan areas such as New York and Los Angeles, placing dangerous constraints on public safety agencies. Similar shortages are just over the horizon for other parts of the country.

The FCC's 1985 study of future public safety spectrum needs estimated that to meet the then anticipated demand, additional public safety frequency allocations of between 12.5 MHz and 44.6 MHz would be needed in the 21 largest metropolitan areas by the year 2000, even assuming the use of advanced spectrum efficient technology.^{2/} Since the 1985 study, the FCC has allocated just 6 MHz nationwide for public safety (and an additional 6 MHz in the for the especially congested Los Angeles area). These allocations, while highly beneficial, did not even begin to satisfy the 1985

^{2/} 1985 Study at 106 (table 37)

estimate of future public safety needs, let alone actual demand, which is well ahead of those 1985 estimates.

Therefore, public safety agencies need access to additional radio spectrum. Improvements in equipment technology (such as digital modulation) will alleviate some of the current shortages, but will fall far short of satisfying all of the critical current and future public safety needs. Similarly, the FCC recently initiated a "spectrum refarming" proceeding that may also lead to more efficient use of private land mobile spectrum (PR Docket 92-235). While APCO supports the Commission goals, we have serious reservations regarding many aspects of the Commission's current refarming proposal. Regardless of the final form of the Commission's spectrum "refarming" effort, however, it too will only solve a small portion of the spectrum shortages facing public safety agencies and other private land mobile radio users. The only way to alleviate these shortages is to allocate additional radio spectrum for public safety use.

APCO Supports the Emerging Telecommunications Technologies Act

The legislation now before this Committee would lead to the release of up to 200 MHz of radio spectrum now set aside for the Federal Government. APCO continues to believe that such a spectrum reallocation is critical if state and local government public safety agencies are to have the radio spectrum necessary to meet current and future demands.

APCO is particularly pleased that the bill continues to include findings regarding the impact of spectrum shortages on

public safety, and provisions to insure public safety agency participation in spectrum planning and reallocation. These provisions accurately reflect the long-standing Congressional insistence that public safety be given "top priority" in matters related to radio spectrum allocation and management.

APCO OPPOSES AUCTIONS

Previously, legislation requiring release of Federal Government spectrum stalled because the Bush Administration and others had insisted that the released spectrum be assigned through auctions. APCO has and continues to oppose auctions, even if there are provisions to exempt radio frequencies allocated for public safety.

The availability of auctions as an assignment and revenue raising mechanism would create further incentives to allocate less spectrum for public safety, and more spectrum for commercial uses for which auctions are permitted. Public safety is already at a disadvantage in the spectrum allocation process because of intense pressure from commercial interests for more and more radio spectrum, especially for various new technologies. An auction system would intensify that disadvantage by creating the potential to raise desperately needed revenue from commercial users.

Therefore, APCO opposes grant of any auction authority to the FCC, unless Congress prohibits use of auctions until after the Commission (1) re-evaluates current and future public safety spectrum needs, and (2) allocates sufficient radio spectrum to meet those needs. Otherwise, public safety needs will be swept aside to make room for revenue raising commercial services.

Mr. Chairman, thank your again for the opportunity to appear before you today. I will gladly answer any questions that the Committee may have.

**Appendix A
Projected Growth**

Based on Docket 84-232, Table 18

Radio Service	Proj 1990 Stations	Proj % Growth	% Growth to 10/92*	Proj Stns 10/92
Local Govt	81,200	6.5/yr	11.69	90,695
Police	92,600	6.2/yr	11.14	102,915
Fire	48,700	6.1/yr	10.95	54,035
Highway Maint	19,900	5.5/yr	9.85	21,860
Forestry Cons	13,900	6.7/yr	12.06	15,575
Total	250,700			285,080

*Projected "Annual Growth Rate" computed using annual compounding for 1.75 years (December 31, 1990, through September 23, 1992)

**Table 2
Actual vs. Projected Growth**

Radio Service	Actual Public Safety Band Licenses**					Diff vs Table 1
	VHF Lo	VHF Hi	UHF	UHF-TV	Total	
Local Govt	8,640	46,551	21,407	3,036	79,634	-11,061
Police	16,215	44,322	19,148	30,391	110,076	+ 7,161
Fire	13,270	34,704	5,401	3,698	57,073	+ 3,038
Highway Maint	13,108	20,864	1,709	7	35,688	+13,828
Forestry Cons	8,483	42,447	635	0	51,565	+35,590

800 MHz Stations Not Included Above

800 MHz Band	Conventional**	Trunked**	Total
806-821/851-866	7,817/4,335	84,920/9,083	106,155
821-824/866-869 National Plan	1,122/ 496	35,450/6,165	43,233
Total	8,939/4,831	120,370/15,248	149,388
Total, All Bands			483,424

** Number of transmitters from FCC license data base on 09/23/92; this count includes all stations of class Fnr (FB, FBn, FXn, etc).

Mr. MARKEY. Now we move to Tom Wheeler who is the president of the Cellular Telecommunications Industry Association—a man who has become a very well-known American in the last 10 days. We welcome you before the subcommittee once again and whenever you feel comfortable, please begin.

STATEMENT OF THOMAS E. WHEELER

Mr. WHEELER. Thank you, Mr. Chairman. It has been too long since I have had the privilege of appearing before this subcommittee. I appreciate the opportunity. I apologize for walking in, in the middle of your statement, Mr. Oxley, but I also observed that it is a unique experience that Eddie and Fritts and I are appearing before the committee agreeing.

Mr. MARKEY. At least you see this as the weigh-in.

Mr. WHEELER. The weigh-in.

Mr. MARKEY. The real battle coming later in the year.

Mr. WHEELER. Well it is a unique experience for me. I will also point out that Mr. Kozlowski—Paul Kozlowski is 1 of the fathers of the business that we are talking about here today and that is wireless telecommunications. As the founder of Contel, he was one of the pioneers in the cellular business and the wisdom that he brings and the experience that he brings is sizeable.

We are here on behalf to the Cellular Telecommunications Industry Association to support this bill for the second straight Congress. There is a lot of talk, as you know, about infrastructure and that is what we are talking about here because the 21st Century is the wireless information century. Information is going to move to people and not vice versa and it is going to require spectrum to do that. Before there were highways there had to be land. Before there can be information highways there has to be spectrum and we commend you for your foresight in starting that process now.

We would have three quick observations to make about public policy in the wireless area. The first is that the new wireless services that will be enabled by this legislation are going to be competition to cellular. Nobody likes competition, but we accept it as a reality. In other spectrum allocation activities, for instance PCS, there are interests which are moving to preclude cellular from competing in order to have less competition themselves. Preclusion favoring one party or another does not advance the wireless world.

The second point we would make is that the grand national purpose can be irreparably harmed unless the Federal Government sets some uniform national rules for its implementation. And the third point, Mr. Chairman, as you have referenced, there is a current great deal of unwarranted concern about the safety of cellular phones and the potential causing of cancer. That should be a wake-up call to all who want to use the radio waves for new services.

Let me expand on each of those points briefly. First of all, the point of competition. It's against human nature to like competition in business. But I think there's a significance here that on this and other issues the cellular industry has not moved to thwart new competition. Cellular started a revolution, whether it is PCS or this spectrum that revolution is going to bring with it competition as well it should. Some will seek to protect themselves from competition by arguing that since cellular already has spectrum it should

be precluded from any new spectrum. That's kind of like the farmer saying—or saying to the farmer that because you got a wheat farm over here you cannot go down the road, acquire another piece of land, and grow barley. The only people that helps are the other barley growers.

We were heartened by Chairman Dingell's original introductory statement on this bill when he said, "It's my strong belief that all spectrum-dependent businesses, including cellular, are potential beneficiaries of Government spectrum when Government spectrum is made available."

In PCS we have seen many push for a position opposed to that philosophy to seek to increase the value of their spectrum award by keeping competition out. I would observe to you only that this legislation and PCS does increase the competition for cellular and we are not seeking to increase our value by thwarting competition.

The wireless revolution is underway. It gives us the opportunity to turn the page on the bad old days when Government would pick and choose what class of people got what assets. We agree with the chairman, let's open things up and compete.

Mr. Chairman, real quickly then to address the issue about cancer. How new wireless services can be hounded and threatened by unfounded hysteria is the lesson of the last couple of weeks. A hearing which this subcommittee—or the briefing which this subcommittee held on Tuesday was terribly important because it brought together the National Cancer Institute, the FDA, the FCC, the EPA and scientific experts all who said, cellular phones are not a cause of cancer. This committee performed a significant services in getting that message out, but I would suggest that that briefing probably will not be enough. That when unfounded scares continue to surface, as they inevitably will, that their extent will be to malign all new wireless technologies and that someone seeking publicity from a lawsuit with the ability to trigger a national panic threatens every new telecommunications technology.

As your briefing made clear, there is no link between cellular and cancer. Nevertheless, the cellular industry has asked the Federal Government to appoint a Blue Ribbon Committee to review research the industry will fund and to revalidate an already considerable body of evidence in that regard. This committee will have a role. You just acted to cut through the hysteria to get the facts to the public. We ask you also to help to cut through the red tape to get the Blue Ribbon Committee moving in the Federal agencies.

You know, Arthur Clark, the author of "2001 A Space Odyssey" had an instant quote. He said, "Any significantly advanced technology is indistinguishable from magic." As you move this country into a wireless information age it is essential that the appropriate Federal agencies assess the scientific facts to help the public understand that magic and we appreciate what you have done earlier this week to speed that process along.

Thank you, Mr. Chairman.

Mr. MARKEY. Thank you, Mr. Wheeler. I would just interject there that while none of our witnesses on Tuesday believe that there was a likelihood of any connection between radio frequency radiation and the initiation of cancer. They still left open the question of whether or not cancer could be promoted, aggravated or ac-

celerated in cases where there are existing conditions. And that is why it is important for us to move forward, because although I think their testimony was reassuring in determining whether the cellular radiation is a carcinogen in and of itself, other questions remain to be answered.

We have requested, as you know, that the GAO do a comprehensive study and get back to us as quickly as possible. I have talked to Sam Broder who is the head of the National Cancer Institute and he has agreed to do an independent study at the National Cancer Institute on this subject, as well.

In the opinion of the subcommittee, we would like to move forward as quickly as possible on this legislation so that we can go through the technical process of reallocating the spectrum in order that the industries can begin to prepare for this occurrence, while at the same time, continue to explore the unresolved health questions that need to be put to rest.

Mr. TAUZIN. Would the chairman yield? If the Chair will allow me. There was one additional, I thought, note of assurance that came out of the subcommittee hearing and that was that the evidence so far, even tends to indicate that the low level, low power radio frequencies we are dealing with probably do not have that affect and that the only evidence of any affect was at very much higher power levels. But we did get a lot of assurance out of that hearing and I think the Chair is correct, I think we should feel safe in moving forward with this legislation while we get even further assurances from the Cancer Institute.

Mr. MARKEY. But again, these particular radio frequencies have not been tested yet. That is the reason we could not get conclusive statements from any of our expert witnesses and, as such, we are going to urge them to resolve this question.

Mr. WHEELER. We seek to fund—to get information to reassure that very fact. And we want to work together with you in that regard.

Mr. MARKEY. We appreciate that, Mr. Wheeler, very much and we appreciate that the CTI is willing to fund a study of that magnitude and, at the same time, we also appreciate the efforts of Sam Broder and others at the National Cancer Institute to use appropriated funds to do that study. And I believe that when the studies are concluded, we can hope and expect that they will put these issues to rest and then, we can move on with this revolution.

We thank you.

The next witness and final witness is Mr. Eric Schimmel who is the Vice President of the Telecommunications Industry Association. We welcome you, Mr. Schimmel and whenever you feel comfortable, please begin.

STATEMENT OF ERIC J. SCHIMMEL

Mr. SCHIMMEL. Thank you very much, Chairman Markey and members of the subcommittee. I am Eric Schimmel, Vice President of TIA, where I am responsible for matters related to mobile radio, microwave, and satellite telecommunications. And I have a brief statement I would like to make in support of H.R. 707.

The Telecommunications Industry Association is a national trade association of over 500 manufacturers and suppliers of all types of

telecommunications equipment and systems. TIA members are located throughout the United States, and collectively provide the bulk of the physical plant and associated products and services used to support and improve U.S. telecommunication services. In addition, TIA members are involved on an ever increasing basis in providing telecommunications equipment and services in other developed and developing nations around the world, thus contributing significantly to achieving a positive trade balance.

On this, my third appearance before you in 3 years, I want to thank you and your colleagues for your tenacity in again reintroducing this critical legislation as H.R. 707. The rationale for expeditious passage and implementation of this legislation which has been well articulated by Congressman Dingell, yourself, and numerous witnesses during these 3 years is still valid, but ever more urgent.

To emphasize the urgency, I would like to call to attention to some examples of significant industry developments during the past the year.

Cordless telephone sales have risen to an annual level of 17 million units from about 12 million units only a year ago.

Cellular telephone subscribers grew to over 10 million from about 6 million a year ago.

These two statistics alone, indisputable reflect the explosive public demand for spectrum-dependent products and services, even during recessionary times.

Additionally, as an accredited technical standards developer, TIA has been under great pressure to develop several standards for new and improved services. These include: a wide array of terrestrial and satellite Personal Communication Services; high-speed digital two-radio communications for State and Municipal Law Enforcement; and Spectrally efficient next generation cellular radio systems.

In addition to these requirements, which are real and immediate, the demand for emerging technologies which will be spectrum-dependent will continue. One such proposal already on the horizon is IVHS or Intelligent Vehicular Highway Systems, which may well be the telecommunications extravaganza of the late 1990's.

The message in all of this is simply that spectrum demands will continue to grow and that the needed legislative and regulatory actions to plan for the public interest is overdue. While the recent NTIA inquiry into spectrum requirements and use may produce an interesting academic report, only a firm legislative directive will ensure that the critically needed reallocation of spectrum access will take place in an orderly and timely manner.

Of all of the planning components which must precede the implementation of new spectrum-dependent services, definitive identification and allocation of that spectrum is the most critical. Service features, selection of technology, regulatory considerations, and scheduling are all dependent upon the amount and location of spectrum to be made available. As you know, this issue has already transcended from being a solely domestic one to frequently having international implications. Sadly, our major foreign competitors seem to have been able to accommodate their new generation of wireless services much better than we have.

We at TIA stand ready to assist Government in any way we can, including participation on the proposed Advisory Committee, but the first step is to pass H.R. 707.

Thank you for your attention. I will be happy to respond to questions.

Mr. MARKEY. Thank you, Mr. Schimmel.

That completes the testimony from our witnesses. We will now turn to questions from the subcommittee. The Chair will recognize himself.

Let me turn to you, Mr. Fritts. You know, it's an oft heard statement that the broadcast industry are dinosaurs, although they don't mention that we are in the age of dinosaurs, which works to your advantage. So, the point is often made that the broadcast industry will die over the next 20 or 25 years as everything goes to the wire, to fiberoptics and digital. You were left behind and there really won't be a broadcast industry as we know it today.

On the other hand your testimony today offers us this promise of the new digital world, the new world of high definition television. If this were properly supported by a transfer of spectrum which the broadcasters may be able to take advantage of, this could offer a rebirth to the broadcasting industry in terms of maintaining or increasing their ability to provide services to Americans, and to the indefinite future.

Talk about that debate, if you would, Mr. Fritts, and what this bill means to your industry in terms of your ability to remain viable over the next 25 to 50 years.

Mr. FRITTS. Mr. Chairman, I will follow your lead on that. As you know, and I think all the other committee members know, that you have been vitally interested in high-definition television, and in fact, at one time having a HDTV exhibit, I think in this committee room, to advance the knowledge on Capitol Hill relative to what might be coming.

We don't believe broadcasting is the age of dinosaurs. Admittedly, it's a mature business, but like always over the last 70 years, it is an evolving business. We are embracing new technologies. One of those is high definition television for the television side. The digitalization of television, if you will, will open many new avenues and opportunities, we believe, for local broadcasters to compete, to open up new revenue streams, and consequently to avoid being in the age of dinosaurs.

For radio, on the other hand, many would say radio was going out of business back when television came in. Radio is stronger and more vibrant today with over 11,375 radio stations on the air today.

The new digital broadcasting technologies are under development. We have had them on the air at NAB meetings and functions. They will again be appearing in Las Vegas at our convention this year.

So, to the question of being a dinosaur, we think that broadcasters are utilizing new technologies to benefit not only their ability to transmit but also the ability of the public to receive first-rate and competitive information.

Obviously, there is more fragmentation and more choice for the consumer as time goes on with many, many competitors in the

marketplace. We know that our job will be difficult, but we think we're up to that challenge with regard to them.

Mr. Chairman, we are today not asking for you to propose allocating any of this 200 megahertz of spectrum to the broadcast industry. As you know, the FCC has already allocated the necessary spectrum for the implementation of HDTV. Now, it's tight, but we think there's enough spectrum which had already been allocated to the broadcast spectrum for us to implement HDTV.

So, in terms of that we look at our friends here at this table who also have new technologies, and to the extent that we could all live in the spectrum efficient world, we would suggest that I think those are the technologies that are eager to utilize the megahertz that will be provided from this legislation.

Again, we support the legislation. Obviously it makes it easier for us to implement HDTV by utilizing that spectrum which has already been set aside.

Mr. MARKEY. All right.

Let me go to you, Mr. Kozlowski. You represent Digital Corporation. But in many ways you represent thousands of other companies across the country.

In terms of the contribution which can be made to the development of new products based upon the opportunities which this new spectrum will offer, have you experienced any extraordinary difficulty in introducing new services, new products, due to the lack of availability of spectrum?

Let me put my finger right on what we're concerned about here. How long will it take us to get our official Congressional Dick Tracey two-way video wristwatches? When will this new generation of products begin to become a reality in our society? How much does this spectrum bill help to give the encouragement to the private sector that will make the breakthroughs?

Mr. KOZLOWSKI. Mr. Chairman, it's difficult to answer the question on the broad scale. Certainly the availability of spectrum is very key, not only in availability, but a broad band of spectrum so that it would not be very much limited by necessity with additional costs in applying the spectrum.

As far as developing the products and services, I think that once the standards are established, and standards which are free for everyone to enter, it would motivate a lot of manufacturers and equipment makers to participate in providing services for the public good.

So, it's important that we get the band width allocation. It's important that we get the standards in place. It's, of course, important that we have the opportunity for people to enter the marketplace and compete openly in providing the services the public demands.

Mr. MARKEY. Mr. Schimmel, would you like to address that question and give us some sense of what kind of products we could expect to see developed?

Mr. SCHIMMEL. Sure. There are a couple of different issues that we have to view as the standards develop because we try to be responsive to the marketplace demands. So, you can come up with conceptual ideas.

The type that have been emerging in recent times are really of two types. Those would best fit in virgin spectrum and would be able to come on-line faster if an unallocated, unoccupied chunk of spectrum were available, then you could begin your planning on that basis knowing that you didn't have to worry about compatibility issues, interference issues, versus what we're dealing with today, which is not all bad.

We'll live with it, whereby the emergence of PCS is going to be dependent upon vacating some spectrum that is currently occupied by fixed operational microwave systems, finding a place to move those people and move them in an orderly fashion suitable to their needs, and then utilize that spectrum.

This transition can frequently take a minimum of 5 years and it's probably not out of line to expect that it will 10 years before it's a done thing.

So, I come back again. If we had our druthers, if we could receive access to some virgin spectrum, albeit not to fill all our needs, but at least some of the more immediate needs, we could progress much faster.

Even in that context, it is a scenario of 2 to 4 years to conceptually develop the product, design the product, develop the product and implement it.

Mr. MARKEY. Thank you, Mr. Schimmel.

I will now recognize the gentleman from Ohio, Mr. Oxley.

Mr. OXLEY. Thank you, Mr. Chairman.

Mr. Fritts, you had indicated that your opposition is against—or you have opposition against the spectrum auction. Do you support the current way that we do this through the lotteries?

Mr. FRITTS. Congressman Oxley, I think what I said was that we do not support the auction of broadcast frequencies for radio and television and commercial stations.

Mr. OXLEY. Existing?

Mr. FRITTS. Existing and new channels for the future.

As you know, there is a contract, we feel, with the Government that we're allowed to use that spectrum for the betterment of the community through public interest programming, through public service, and through a whole plethora of public service and public interest news, sports, weather, providing information to the listening public.

That contract has existed since 1934. We believe an auctioning of the broadcast spectrum would violate that contract and would basically negate a lot of what we have established working together with the Congress through the years.

Mr. OXLEY. So you would distinguish between the broadcast spectrum and, for example, what Mr. Wheeler may be interested in in terms of the new spectrum that's made available?

Mr. FRITTS. We would distinguish certainly in that area. As you realize, we're the only ones that don't have a charge for the end user. We don't charge the listeners in this process, and I think almost every other entity does have some, with the exception of the public service area here, does have some charge for the end user in the utilization of those frequencies, and we think that's distinctive.

Mr. OXLEY. OK.

Mr. Wheeler, some say you already have enough spectrum, that, in fact, the cellular growth has been so great that indeed you don't really need any other new spectrum. How would you respond to that?

Mr. OXLEY. Well, there is good news and bad news in terms of cellular growth. The growth is terrific. The bad news is the spectrum is a finite resource and it fills it up. I don't know if you during the Inaugural activities, for instance, tried to use your cellular phone in this town, and you couldn't get out because all of the frequencies were busy. The problem that exists right now is that in major markets across the country, you can't get on the spectrum. There's only so much,

Now, many have pointed to digital and said well, maybe digital is a solution to that. The difficulty with that is that hopefully over the long run, digital is going to have an impact, but we have to worry about what's going to happen to the 10 million subscribers who are using cellular today and they wake up in the morning and find they own a Betamax and it's of no value at all to them.

So when you take our existing analog responsibility to serve these 10 million people and the growth in analog area, and even when you add on that, the new compression technologies of digital, we're running out of air. It's that simple. We can't offer the kinds of services that Mr. Koslowski, for instance, was talking about in the existing spectrum.

Mr. OXLEY. But this is a peculiarly urban phenomenon?

Mr. WHEELER. It's happening everywhere, and the interesting thing on that point is that probably the most significant rural impact is that you don't want to disenfranchise the rural user. You don't want the rural user to exist in an analog world and then, you know, to drive from Northwestern Ohio into Columbus all of a sudden and find out that that's a digital world and his phone doesn't work. So you can't really break it apart into rural and urban.

Mr. OXLEY. OK.

Let me just explore with you very briefly. I was unable to attend the briefing the other morning regarding the cancer scare. What is your best judgment as to the role of the media in these kinds of things? I mean, looking back on it, the ALAR scare, for example, turned out to be a very well-orchestrated effort by certain groups that apparently used the media for their own ends in essentially scaring the devil out of the American public, obviously, as it turns out, for no apparent reason and no apparent purpose.

What's your best judgment about a responsible media approach to these kinds of things?

Mr. WHEELER. I don't know how you can dangle red meat in front of somebody and not expect them to respond accordingly. I think that what happened in this situation, as you appropriately suggested, is there was a lawsuit filed. The interesting thing that's happened in that lawsuit is that through the course of the history of the lawsuit, it has been nothing but delaying tactics that one would suggest was to buy time for some media attention.

I'll give you an example. The defendants in that suit asked for the deceased's medical records, and the plaintiffs moved to deny access to them. Now, access will be made available eventually, but—

Mr. OXLEY. Through the normal discovery process?

Mr. WHEELER. Through the discovery process. But that information could have been out on the table at the outset, the first day that this was discussed, and it was blocked through legal processes.

I think that it is very worthwhile to continue to raise questions and to ask questions. That's why we're stepping up and saying that we will support research, that we'll re-validate the existing body of research that is already there and conclusive on the subject. There are some times, however, when a feeding frenzy does result, and I think that's what we've seen here. Fortunately and, again, thanks to this committee, the facts are now beginning to get out.

Mr. OXLEY. Well, I appreciate that. It is a difficult question in a free society because in the ALAR situation, for example, it cost the apple industry literally millions and millions of dollars and probably a lot of jobs and the like. So it is a difficult area to deal with, particularly when you are dealing with unknowns and a lot of medical unknowns, as it were in this kind of a case, and the effect it had on your industry, hopefully short-term, but obviously some damage to your stocks and so forth.

Mr. Fritts, do you have a comment on that just in a general sense about how we can deal with these kinds of issues and still keep away from it being literally a circus?

Mr. FRITTS. Well, fortunately, and I don't know all of the facts of this particular circumstance. But fortunately, as Mr. Wheeler has pointed out, the other side is now being heard as well, and I think some of these issues are time-sensitive, and where there is a void of information, perhaps the public is given one side of the information until the other side is in fact presented, and I think that's what in this case is taking place now.

Mr. OXLEY. Thank you. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

The gentleman from Louisiana.

Mr. TAUZIN. Mr. Fritts, I was interested in the discussion you just had with Mr. Oxley on the question of auctions, when they are appropriate, and when they might not be appropriate. You held up a distinction in broadcasting that you do not charge subscriber fees. The inference being that if someone charged subscriber fees for a service for which the public spectrums are allocated, that perhaps some form of compensation, some auction, some lottery, some compensation to the general public might be appropriate. Is that a proper inference?

Mr. FRITTS. A clarification, Congressman Tauzin, what I am trying to say is that, as a general rule, we were not supportive of spectrum auctions per se. We are particularly offended by spectrum auctions for broadcast spectrum. What we have seen in the marketplace is that where the end-users, the consumer, is charged at the end of the road for those types of uses that, oftentimes, when charges, or fees, or auctions are implemented, those fees flow through directly to the end-user as an end result. That is a policy decision that this subcommittee will have to wrestle with.

In terms of the overall legislation, there is legislation which I know you are aware of that passed the Senate last year, and that is the Inouye-Stevens legislation on this, which does provide for

auctions, but also exempts broadcasters provided that they are still subject to the public interest standard.

Mr. TAUZIN. Herein is the point that I want to make, the argument that you make is not so much that subscribers are not paying at the end for broadcast signals. The argument you make that I think is reflected in the Inouye legislation is that there is a quid pro quo in the public service requirements of broadcasters, so that the public is getting something for the use of that spectrum in the requirement by the private enterprise business here, that it does do something in the public interest in return, its quid pro quo, for its right to use that spectrum.

The reason I make that point is that even if the subscriber is not charged, in all instances, in yours and other instances, there is still a business for profit using a spectrum that generally belongs to the public that we, in Washington, in one form or another, allocate to private businesses to make profit with. That is common for all of you, is that not right?

Mr. FRITTS. Unless we are victims of unintended consequences and bad operations.

Mr. TAUZIN. At least you intend to make a profit.

That takes me to the next step then. If we allocate spectrum, if we make spectrum available for people in the private enterprise world to use and make profit from, without a public service quid pro quo requirement, should we not, as a matter of good stewards of public property, exact some charge, some compensation to the general public for that use?

I would draw the analogy to the public lands of the United States. We might make a policy decision that certain public lands will be used free of charge by the public for good purposes—that is, parks and other wilderness areas that we may want to visit and enjoy for some small charge.

On the other hand, we may want to make some public land available to private people to profit from, in which case it seems to me we have an obligation to the general public, to the Treasury of this United States, to exact fair compensation for the transfer of that public property into private hands for private gain.

It is with that thought in mind that I think we get into these arguments about what is the correct way to exact that compensation for the general public, be it a lottery, be it an auction, or what-have-you.

My question to you is, if we fail to do that, if we don't exact a quid pro quo, either public service, some good public good for the general public out of the allocation of the spectrum, if we simply allocate it away for people to make profit from it, and never ask for something back for the general public, are we being good stewards of a public property that we have been entrusted with as members of this board of directors in Washington?

Mr. FRITTS. Congressman Tauzin, I cannot argue with your premise that you have laid out, and you have done it very well. Again, as you laid out the quid pro quo of the contract between the Government and the broadcasting industry, that is special and it is unique, and doesn't exist elsewhere. Of course, you are really touching on the keystone of the policy question as to how to go forward with the allocation and what to do with the spectrum, wheth-

er it is done by lotteries, and there are problems with lotteries, I think, that many would agree.

I would point out that broadcast licenses for commercial full-power radio and television stations have never been either on the auction block or as a part of the lottery process because they go through a different process at the FCC.

Mr. TAUZIN. Let me kind of throw it out with the time I have remaining to anyone of you other gentlemen to comment on the premise I laid out. It was probably easier for Eddie to agree with me since he can make an exception in this case.

Would any of you other members of panel like to quarrel with that premise and, if so, how do you quarrel with it, anyone at all, any volunteers?

Mr. RAND. Sir, I wouldn't necessarily quarrel with the premise, but I would say in the public safety sector it is extremely important, not only that the public safety areas be exempted, but also no lotteries or auctions should go forward without first a study by the FCC as to the real needs of State and local government, and an allocation made for that purpose before we proceed. Otherwise, we in State and local government cannot compete with the commercials for the purchase of that spectrum.

Mr. TAUZIN. Your argument is that there is a quid pro quo in public safety in those areas?

Mr. RAND. The other point I would like to make is that that is an issue that could be addressed separately from this bill, and we need spectrum today. We need two-way video right now in public safety, and we don't have the spectrum available for it. I would strongly suggest that APCO would like to see this bill go forward and the matter of auctioning or lottery be addressed as a separate issue.

Mr. TAUZIN. How about you private entrepreneurs, how do you feel about the premise?

Mr. KOZLOWSKI. I believe probably the problem goes back to cellular. There was some profiteering made through sale of licenses. If the process has been established which would put qualified participants, people or companies that desired to provide the service of a public good, then I believe a lot of this could have been avoided because most of the licenses would not have been resold.

I think that the lotteries allow people to come into the situation with the idea of making quick profits. I think that if the process was established in such a way that the frequency is allocated for public good, and if the construction of the plant is such that it benefits the public, then keeping the cost down is key because any cost incurred by the operator ultimately has to be passed to the customer and, therefore, there is no real advantage in charging that additional cost.

So, in my mind, if the process is established correctly, the object will be then to keep the price down to the public, which means that any kind of cost that you pay to acquire the license will be a burden on the public.

Mr. TAUZIN. I think my time has expired, and I don't want to belabor it. I just want to point out that to those users of a service who might pay an additional fee, the answer is that the whole of the public is allowing someone to profit, and for them to make use

of that spectrum for zero compensation unless there is some form of sale, some auction, some lottery, some compensation to the general treasury.

The point you make, sir, about the resale, and about people getting a part of the spectrum, speculating with it, making great profit with it, never having used it for the purpose intended is what brings to mind the importance of the premise I laid out, and that is that we have to be better stewards than we have been in the past of some of the spectrum.

Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired. The gentleman from Illinois, Mr. Hastert.

Mr. HASTERT. I thank the chairman. I would like to follow up a little bit on my colleague from Louisiana's point. Last year when we did the cable bill, the gentleman from Louisiana really put a factor of competition into that piece of legislation. We've seen possibilities for micro-dish and wireless cable and all these things but we have also seen abuse. In my office I've had complaints from constituents who have been caught in scams, the scams that they invest a couple thousand dollars and apply in a lottery under the auspices of some attorney or legal office and they may be winners or they may be losers but that legal office or those attorneys also have thousands of clients and some of those clients hit. They get the lottery and then that is sold back into the private sector at literally hundreds of thousands of dollars in some situations.

You know, as those spectrums are absorbed by those profit-takers, you pay for it and the public pays for it and that is the status quo. That is what happens with the lottery today.

Mr. Rand, I understand your concern for public safety. I have people in my district that are looking for more spectrum space for public safety and fire departments and police departments—I understand that, but you made a statement and said if it went into an auction system the public sector would just get the remnants.

Would you expand on that? What is not acceptable?

I mean you said you would get stuff that you couldn't use—the trash, the Pintos, the unacceptable stuff.

Mr. RAND. Well, the point being that if the purpose of the auction is to raise revenue, there is no incentive to give it away. The incentive is to sell it, so if you have valuable pieces of the spectrum that are available, then you want to make the most money you can.

Mr. HASTERT. What is more valuable than other pieces, say?

Mr. RAND. We must have certain contiguous portions of the spectrum that are best utilized for the type of radio communications that State and local governments use.

Mr. HASTERT. And what's the fear that you get stuck with?

Mr. RAND. That we would be given portions of the spectrum that are not best used for that purpose.

Mr. HASTERT. You don't have any confidence in the Congress, that we do care about public safety and we wouldn't set aside—

Mr. RAND. We have great confidence in the Congress. That's why we keep coming back to you!

Mr. HASTERT. All right.

Mr. RAND. Because we are supposed to be given priority but we feel that most of the radio channels that we have in State and local

government were not given to us. We won them on the field of battle before the FCC.

We will continue to fight for spectrum for State and local government.

Mr. HASTERT. So your concern is that you won't get what is usable for your needs.

Mr. RAND. Right. We would like to have our needs first examined and allocated before the auctioning process would start.

Mr. HASTERT. If you go back though, and I'm open for anyone to disagree with me, if you go back though on the issue of public lands and not so much today—I mean the parks and things that people have to use and grazing fees and all those other things that we look at in this country, but, you know, back when we were selling land, period, and the land speculators came in and they bought up, you know, sections and sections and especially in my home area in the Midwest, they sold at a great profit.

Now that raised the price of land. That income didn't come back to the Government and people paid a premium to get that service so, you know, land rose into land speculators and I think that there will probably be people who are speculating on that spectrum also.

If that is the case, then you ought to do away with that speculation and let people bid on it and people who are appropriately able to bid on it, and let that flow to those people who are users instead of the middle guy who makes huge profits on it and nobody accrues benefit from that.

Would anybody care to comment on that?

Mr. WHEELER. Mr. Hastert, let me pick up on a point you just made about speculators that is, I think, right on target.

As I said in my comments, the short term issue here in terms of new spectrum is what is called PCS spectrum that is being allocated by the FCC right now. There is an effort underway by people who want to have as much value in that spectrum as possible to limit the number of players who have access to that spectrum—specifically, let's keep the cellular guys out, for instance, is of concern to us.

It's understandable why they would want to do that. It increases the value of their asset. It keeps out competition. It is a great scheme if you are working that angle.

One of the things that bothers me is that a lot of the companies propounding this are companies who won or in a competitive process received cellular licenses last time around, were given a public trust to operate a wireless telecommunications service and did not build it—sold it immediately and are now back in saying excuse me, I would like to do this again—it worked the first time around. You have got to commend them because they learned from their experience, but that doesn't mean that it's the right policy.

Mr. HASTERT. I tend to agree with you and that is one of the things that I think—and certainly in the law if whether you auction it out or if you have a lottery system, those people that hold that have to use it and it has to be used certainly for public benefit or, you know, a public service meeting of the private sector also.

I thank the gentleman and certainly I thank the chairman.

Mr. MARKEY. The gentleman's time has expired. The gentleman from Pennsylvania, Mrs. Margolies-Mezvinsky.

Ms. MARGOLIES-MEZVINSKY. I have no questions.

Mr. MARKEY. The gentleman from the State of Virginia?

Mr. BLILEY. No questions, Mr. Chairman.

Mr. MARKEY. Are there any other questions from members of the subcommittee at this time?

[No response.]

Mr. MARKEY. Let's wrap up then. Let's give each one of you 1 minute to summarize what it is that you want the subcommittee to remember as we mark up the bill in 4 minutes, OK? So if you would each take 1 minute and give us that vision, I think it could help us. We are not debating auctions versus lotteries right now. We are debating the need for us to get this 200 megahertz and begin the process of reallocating it over to private sector use, so each one of you should give us 1 minute and tell us why this legislation is important.

We'll begin with you, Mr. Kozlowski.

Mr. KOZLOWSKI. Chairman Markey, I believe that the objective here should be to give adequate band width to the frequency available for the industry. It should be free of charge. There should be no cost involved in acquiring. There should be no contention for the frequency. It should not be a frequency that is being used by someone else now that has to be worked around. So it should be a clear channel. It should be broad band, and it should be free.

Mr. MARKEY. It should be free?

Mr. KOZLOWSKI. Yes, sir.

Mr. MARKEY. So you don't think Ross Perot should be able to buy the entire spectrum?

Mr. KOZLOWSKI. No.

Mr. MARKEY. Mr. Schimmel?

Mr. SCHIMMEL. Thank you, Chairman Markey.

I would simply reiterate that the needs are here, they are apparent. We stand ready to work on industry-Government forums, which hopefully would be the advisory committee to expedite the implementation of the spectrum. While I have been biting my tongue regarding the auction issues, we stand ready, in fact, are anxious to see what Congressman Oxley's proposal is, and would hope that additional hearings would be called to address those issues specifically.

Thank you.

Mr. MARKEY. I thank the gentlemen. Additional hearings will be held.

Mr. Wheeler?

Mr. WHEELER. One, we would urge you to report the bill.

Two, when the bill is law, and with regard to other new telecommunications services, to have a policy of entry and competition, no preclusion, no exemption, and to provide for uniform national standards so that there can be a national system built, and not vulcanized across the country.

Mr. MARKEY. Thank you, Mr. Wheeler.

Mr. Rand?

Mr. RAND. The critical issue is moving the spectrum and making it available. Therefore, we would encourage that this bill go forward. It has been, I think, maybe the third time it has been introduced, and the auction issue has possibly caused its failure. There-

fore, we would encourage that that be addressed as a separate issue.

For public safety, we need it for maps, we need it for video, we need it for fingerprints, all these types of things, and we need it now. We would encourage that it move forward in an expeditious manner, and that the concerns of public safety be addressed as this committee is addressing them.

Mr. MARKEY. Thank you, Mr. Rand. You put your finger on a very important point. If 1 and 2 and 3 years ago when we tried to move the legislation, we had been successful, we would now be debating what charge should be levied for it. At this point, it would already have been moved over, and it would be ready to go. Instead, we haven't even begun the process of bringing it over, which has always been, to our perspective, a nonsensical posture.

Mr. Fritts, you have the final word here today.

Mr. FRITTS. Mr. Chairman, we again applaud your efforts and the efforts of the subcommittee to move this spectrum into the private domain. We think it is critical. We know that you have made valiant efforts in the past. We hope that you are successful this time.

I agree with the other panelists today that it is important to get it done, to report the bill, and let's see if we can get this spectrum available and start using it.

Mr. MARKEY. Thank you, Mr. Fritts. Mr. Dingell and I, and Mr. Oxley, all members of the committee, want to move forward on this issue immediately.

We thank all of you, and we are going to stick close to you in the coming months, but this hearing is adjourned.

Thank you.

[Whereupon, at 2:09 p.m., the hearing was adjourned, to reconvene at the call of the Chair.]

[The following letters were received:]



March 2, 1993

Honorable Edward W. Markey, Chairman
House Telecommunications & Finance
Subcommittee
316 Ford House Office Building
Washington, D. C. 20515

Dear Chairman Markey:

On behalf of the National Telephone Cooperative Association (NTCA), I am writing to express support for H.R. 707, the "Emerging Telecommunications Technologies Act of 1993." On March 12, 1991, we testified before the subcommittee in support of similar legislation, H.R. 531, which was introduced by Energy and Commerce Committee chairman John Dingell and subsequently approved by the House of Representatives.

NTCA is a national trade association comprised of almost 500 locally owned and operated small rural cooperative and commercial telephone systems located in 47 states. Our members use spectrum to provide various radio services to their subscribers. Those services include cellular, paging, land-mobile, microwave, wireless cable, and Basic Exchange Telecommunications Radio (BETRS). NTCA members also use radio for internal purposes, such as Telephone Maintenance Radio. Small rural companies are also interested in providing new radio technologies, such as personal communications services (PCS) as well. PCS and other new technologies will require more spectrum. H.R. 707 ensures that this spectrum will be available.

NTCA also applauds the provision in the bill for an advisory committee to assist the Secretary of Commerce in identifying spectrum to be reallocated for commercial use, and recommends the inclusion of at least one small rural telephone system on that panel.

We understand the subcommittee intends to keep the auction issue separate from spectrum allocation legislation. Therefore, we will not address our serious concerns about auctions in this letter.

Sincerely,

Michael E. Brunner
Executive Vice President

MEB:clm

National Telephone Cooperative Association, 2626 Pennsylvania Avenue, N.W., Washington, D.C. 20037-1695 Tel 202/298-2300 FAX 202/298-2241



**ASSOCIATION
OF AMERICAN
RAILROADS**

Edwin L. Harper
President and
Chief Executive Officer

February 3, 1993

Honorable Edward J. Markey
Chairman, Subcommittee on Telecommunications
and Finance
Committee on Energy and Commerce
U.S. House of Representatives
Washington, DC 20515

ATTN: Emerging Telecommunications Technologies Act

Dear Mr. Chairman:

The Association of American Railroads (AAR) is pleased that you have reintroduced the "Emerging Telecommunications Technologies Act" (H.R. 707) in the 103rd Congress. AAR strongly endorses this important legislation and urges its expeditious passage.

With the Federal Communications Commission (FCC) poised to authorize licensing of emerging technologies, the need to liberate federal government spectrum for emerging technologies -- and possibly as a new home for fixed microwave licensees displaced under the FCC's plan -- is more urgent than ever.

**Federal Spectrum Could Eliminate Need
to Displace 2 GHz Microwave Licensees**

The FCC currently is receiving a final round of comments on its proposal to reallocate the 2 GHz band for personal communications services (PCS) and other emerging technologies. This proceeding has generated controversy because of the potential disruption of the nation's railroads and other vital industries that currently operate fixed microwave facilities on the 2 GHz band. About 29,000 microwave facilities face potential displacement under the Commission's proposal. If underutilized federal spectrum were made available immediately for PCS, the many problems associated with deploying PCS in the heavily used 2 GHz fixed microwave band could be eliminated.

**Federal Spectrum as a Safe Haven for Microwave Licensees
Is Essential to FCC's Plan to Deploy PCS in 2 GHz Band**

50 F Street, N.W., Washington, D.C. 20001 (202) 639-2402

Chairman Markey
February 3, 1993
Page 2

As it currently stands, the Commission's plan to deploy PCS in the 2 GHz band hinges on PCS entrants successfully sharing spectrum with existing microwave licensees or relocating microwave incumbents to bands above 3 GHz. The feasibility spectrum sharing is still uncertain, and comments filed with the Commission confirm fears that the bands above 3 GHz have insufficient capacity to accommodate displaced microwave licensees. Thus, freeing up federal government spectrum may be the way to reconcile the needs of microwave incumbents and those of emerging technologies.

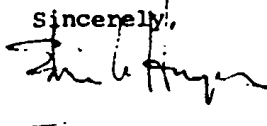
The availability of frequencies between 1710 and 1850 MHz is indispensable to effectuating the Commission's plan to deploy PCS. This band offers significantly greater potential as a relocation band than any of the bands above 3 GHz because it already is allocated for fixed microwave service and its proximity to the 2 GHz band will involve a simpler and less expensive move. The National Telecommunications and Information Administration already has indicated that some 1710-1850 MHz frequencies would be available for displaced 2 GHz licensees that cannot operate reliably at the higher bands because of geographic and atmospheric conditions. Now it is clear that additional federal spectrum must be generally available for displaced licensees if anything in the 2 GHz spectrum they now occupy is to be available for emerging technologies.

**Using Federal Spectrum for Emerging Technologies or
Relocation Home Furthers the Goal of the Act**

The Emerging Telecommunications Technologies Act contemplates reallocating federal government spectrum for new commercial services employing emerging technologies. AAR construes the Act to permit making liberated federal spectrum available as a relocation home for displaced 2 GHz licensees. Using federal spectrum in this manner is consistent with the important goal of the Act -- encouraging rapid deployment of emerging telecommunications technologies.

AAR congratulates you on your leadership in freeing up new spectrum to spur development and facilitate deployment of new, commercial telecommunications technologies while avoiding disruption of current, vitally important services.

Sincerely,



EMERGING TELECOMMUNICATIONS TECHNOLOGIES

THURSDAY, APRIL 22, 1993

HOUSE OF REPRESENTATIVES,
COMMITTEE ON ENERGY AND COMMERCE,
SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE,
Washington, DC.

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 2322, Rayburn House Office Building, Hon. Edward J. Markey (chairman) presiding.

Mr. MARKEY. Good morning. For the past 60 years, the Federal Government has wrestled with the proper way of providing access to one of the most valuable resources our country has for radio spectrum. For much of that time, the Federal Communications Commission used comparative hearings to choose which company or individual would best serve the public interest.

In the early 1980's, as the delay and imprecision of comparative hearings came under attack, the Reagan administration proposed a lottery system as a way of awarding licenses. For the past 10 years, we have witnessed the "get rich quick" appeals by firms peddling licensing applications for sale, and frankly the entire licensing process has been tarnished. In addition to a loss of credibility, the lottery system also resulted in a loss of dollars, since the lottery winners are getting paid for a resource which belong to the Federal Government. Today we begin the process to change all of that.

The hearing today will focus on spectrum auctions and whether they represent a step forward for budget policy and communications policy. During my tenure as chairman of this subcommittee I have held the view that the current lottery system is bad communications policy and bad fiscal policy. I find the open marketing of schemes to roll the dice at the FCC as contrary to the public interest. In addition, the so-called secondary market that has developed with lottery winners receiving millions of dollars by getting their name pulled out of a hat provides telling evidence that the Government is losing out on much needed revenues.

In the past I have worked hard to make certain that the Interior Department and other Federal agencies get a fair share when it comes to leasing Federal lands of oil and gas leasing, coal mining, and other activities. I think the time has come to apply these same lessons to the Federal Communications Commission and the use of radio spectrum.

But deciding to use an auction process to assign radio spectrum does not end the debate. Several questions arise. How should the

(81)

auction be structured to serve communications policy as well as yield substantial revenues? How do we continue to encourage innovation in communications? How do we ensure that entrepreneurs without deep pockets will have a chance to get to provide their innovative services? How do we advance other interests that are fundamental to the communications policy of our Nation? That is the task before us today, to seek answers to these questions.

The witnesses today will explore these questions and others from a variety of perspectives. We have a large company perspective, a small company perspective, companies with licenses and "wannabees." We have companies which have invested millions to define and develop new communications services and others that wish to capitalize on that kind of investment. Together I hope that today, through this hearing, the subcommittee will get some of the answers to the questions which have been raised.

I am particularly concerned that in our efforts to maximize revenues we do not lock up all of the spectrum in the vaults of large companies. The spectrum, after all, is the only way wireless services can be delivered. All over this country in basements and garages smart people with big dreams need access to this spectrum to push the edge of the technological envelope. As we all know, the engine in job growth has been from the small start-up companies. As we address this issue, we must not let this engine stall. That is where the jobs are. That is where the new ideas are. If we don't find a way of keeping small companies in the game, we all lose.

Over the next several weeks, I expect us to take up auction legislation. My goal in this process is to come up with an auction bill that gets the administration the revenue it seeks and does not trample upon sound communications policy. I look forward to working with the members of the subcommittee to accomplish this goal.

And with that, time for an opening statement has expired. I now turn to recognize the gentleman from Ohio, Mr. Oxley, for his opening statement.

Mr. OXLEY. Thank you, Mr. Chairman. Indeed, this is a perfect time for this hearing based on the historical precedent with, I think, the perception and the reality that the past system of lotteries have been an abject failure both from a fiscal standpoint as well as a public policy standpoint in regard to telecommunications. And what with the new Clinton budget and the emphasis on providing significant amounts of revenue in the reconciliation package, your timing couldn't have been better.

Along with many of my colleagues on this subcommittee I have strongly supported the concept of spectrum auctions since they were first proposed several years ago. While I wish we could have enacted auction legislation then, I am reminded of the phrase "better late than never."

Early in the 103rd Congress I introduced H.R. 857, a bill that would allocate 200 megahertz of spectrum from the Federal Government to the commercial sector. Additionally, the bill would establish the future spectrum allocations, including the transfer of 200 megahertz of Government-controlled spectrum, be governed by a competitive bidding process.

Auctions make sense from both a fiscal and a communications policy standpoint. In terms of fiscal policy in these days, to the

Federal budget deficits the benefit is obvious. Auctions will raise revenues. There is a strong bipartisan consensus that the public should be compensated for the commercial availability of scarce radio spectrum. In terms of communications policy, auctions will help to ensure that the spectrum will go towards the best possible use by qualified licensees who want to provide services in response to consumer demand. Neither Congress nor the FCC is equipped to determine what services the marketplace yearns, but most importantly the auction ensures that the public receives the benefit of making spectrum available, and not private speculators who have gained in a private after-market.

Much work needs to be done on fleshing out the details. I see several potential pitfalls, many of which are addressed in my bill. First, we have to address the serious and legitimate concern about small to mid-size entrepreneurs being squeezed out of the bidding process by those with deeper pockets. My bill would allow those who can't afford to pay up front to pay over time through royalties. Payment over time or any other reasonable method.

At the same time, to prevent speculation spectrum applicants would be required to demonstrate their intended uses of the spectrum and a timetable for deploying these services. I do not believe it would be consistent with one of the major objectives of my legislation, getting new technologies into the marketplace, to allow a new spectrum to be allocated and then simply warehoused.

Mr. Chairman, in closing, I would like to point out that coincidentally it was this very same day 104 years ago that the Federal Government fired the gun for the great Oklahoma land rush. I pre-empted you there, my friend from Oklahoma.

Mr. SYNAR. You did. That ain't untypical for you.

Mr. OXLEY. The Government gave away the land then much the same way the Government today gives an equally finite resource spectrum. Today, though, Mr. Chairman, an enormous Federal deficit stands as a backdrop to everything we do. Taxpayers can no longer afford to give away such a vital resource. Auctions will address this inefficiency.

And I thank the Chair. And my friend from Oklahoma.

Mr. MARKEY. The gentleman's time has expired, and we are about to invoke the old Mo Udall axiom that "everything has been said but not everyone has said it yet." So we now in turn recognize the gentleman from Oklahoma.

Mr. SYNAR. I had a great opening statement. You know, on that great day 104 years ago at this very time the Sooners lined up—excuse me—the Boomers lined up. Those people who went over the night before and staked their claim like you just did were the Boomers. And I just need to remind you that it was Boomer Sooners that defeated Ohio State on that fateful day.

Mr. OXLEY. If the gentleman would yield? That was that great Oklahoman Huey von Sharman that kicked the field goal.

Mr. SYNAR. Yes.

Mr. OXLEY. I remember him, yes. Great Oklahoman.

Mr. SYNAR. Anyway, I will turn my statement in to the record and give you only my conclusion which is—I am surprised you did steal this one either. Will Rogers, who was a great Oklahoman from my district, once observed: "I'm putting all my money in land

because I understand they ain't making it no more." We are dealing today I think with a resource they ain't making no more and we must maximize the taxpayers return while protecting the public interest, and ignore those who have their own interest in controlling as much spectrum as possible for as little as possible.

So with that I hope to learn today what we are doing.

[The prepared statement of Mr. Synar follows:]

STATEMENT OF HON. MIKE SYNAR

Mr. Chairman, it is significant that this hearing has been scheduled for today, the 104th anniversary of the great Oklahoma land rush. One hundred and four years ago, at this very time of day, thousands of settlers were racing to stake their claims as the Federal Government opened up a precious natural resource to development. It strikes me that today's hearing is about how we set the ground rules for the twenty-first century's land rush for another precious natural resource, radio spectrum.

The challenge before Congress is how we set the rules to assure that the spectrum land rush will maximize the return to the spectrum owners—the taxpayer—in terms of air monetary value and appropriate utilization of the spectrum, while promoting sound telecommunications policy that protects the public interest.

As the need for Government revenues has grown more critical during the past decade, Congress has been increasingly called upon to maximize taxpayer return when the Federal Government sells, or leases, its resources to the private sector. In the mid-eighties the full Energy and Commerce Committee wrestled with a privatization scheme for Conrail. On my Government Operations Environment Subcommittee we have sought to increase the Government's return for granting private parties mineral extraction rights, timber rights, cattle grazing rights and exclusive concession rights within our national parks.

In all of these efforts—including the allocation of spectrum—it is important to set up a fair regulatory framework that encourages as much access to the resource as possible by as many qualified private parties who wish to participate. This guarantees a better market for the Government resource, and consequently, a better return for the Government.

In 1991 the Commerce Department estimated that the market value of cellular telephone licenses handed out for free by the Federal Government during the 1980's was \$46 billion dollars. That's close to four times the amount in the President's stalled stimulus package. We can't afford to miss any more golden opportunities and we can't afford to give away any more spectrum.

Will Rogers, the great Oklahoma man from my district, once observed, "I'm putting all my money in land, 'cause I understand they ain't makin' it no more." We're dealing with a resource "they ain't makin' no more" and we must maximize the taxpayers' return—while protecting the public interest—and ignore those who have their own interest in controlling as much spectrum as possible for as little as possible.

Mr. MARKEY. The gentleman's time has expired. We will now turn to our panel of experts. As Will Rogers once said, "An expert is anyone who lives farther than 500 miles away from the problem," and since we are the problem, we have this panel that is going to come in here and help to advise Washington what we should be doing on this issue.

The first panel consists of Mr. Douglas Smith, President of Omnipoint Corporation; Mr. Geoffrey Goodfellow, Chairman of RadioMail Corporation; and Mr. Jack Pellicci, vice president of Business Development of Oracle Corporation.

Why don't we begin with you, Mr. Smith, if we could. You have got 5 minutes. And each of you will have 5 minutes, no more. Then we will go to questions. Whenever you feel comfortable, please begin.

STATEMENTS OF DOUGLAS G. SMITH, PRESIDENT, OMNIPOINT CORP.; GEOFFREY S. GOODFELLOW, CHAIRMAN, RADIOMAIL CORP.; AND JACK PELLICCI, VICE PRESIDENT, ORACLE CORP.

Mr. SMITH. Good morning. My name is Douglas Smith. I am the present of Omnipoint Corporation.

Omnipoint is a small, entrepreneurial, high technology company which developed the first hand-held spread-spectrum PCS phones. Omnipoint was awarded a tentative Pioneers' Preference by the FCC for its work in helping bring PCS closer to a commercial reality.

PCS, Pioneer's Preferences and auctions, I believe, are inextricably linked. We appreciate this opportunity to present a perspective on how small entrepreneurial may view and be affected by the proposed auction legislation.

Discussions on licensing PCS are now into their 5th year, and it may help some of you to look at the chart that we brought into the room here to give an idea of the perspective of the time line that has been going on. PCS was first proposed in January of 1989. In 1989, Omnipoint had six employees and a prototype of a new wireless technology based on spread spectrum theory, which until then was primarily used for military communications.

At that time, Omnipoint was in a position similar to hundreds of other small firms in high technology. We had unique ideas and no money. None of us took salaries for the first 2½ years of the company's existence. Some of the engineers double mortgaged their homes and delivered pizzas at night to survive. We had a vision we believed in, but we had chosen an industry which has a unique roadblock to bringing entrepreneurial RF service ideas to market. Unlike any other industry, the RF industry presented us with no visible means of obtaining access to the only distribution channel; that is, the radio spectrum, required to use and deliver our technology. It was as if when Apple Computer invented the Macintosh it had no means of obtaining access to the shelf space in the Nation's only retail distribution channel.

For the first 15 months of the PCS industry, there were only five companies that requested experimental licenses. The reasons for the lack of willingness to experiment centered around the fact that no company had any way of knowing that it could ever obtain a license to the radio spectrum in a world of lotteries and litigious comparative hearings.

Everything changed in April of 1990 when the FCC announced that it intended to create the concept of Pioneer's Preference to reward innovators in the use of radio spectrum by granting them a license. The Pioneer's Preference incentive system literally launched the U.S. PCS industry. In the following 16 months after the Pioneer's Preference concept was announced, 108 companies requested licenses to perform PCS experiments.

Almost immediately after the promulgation of the Pioneer's Preference rules Omnipoint made the decision to seek what for it was a significant capital infusion. At that time the FCC had still not given any indication what frequency band would be chosen for PCS or even if PCS would be allocated spectrum. Moreover, the recent results of certain tests in the 1850 to 1990 megahertz band had

met with enormous criticism regarding the technical feasibility of using that band for PCS. Despite that Omnipoint took the enormous capital risk and spent more than \$12 million to develop its unique PCS pocket phones and data systems.

We knew that we might not succeed in obtaining a Pioneer's Preference, but the potential reward of the Pioneer's Preference warranted the development risk. This was obviously true for other companies as well. Nearly 100 companies filed applications for a PCS Pioneer's Preference. No company during the comments and replies on the FCC's tentative PCS awards said that the Pioneer's Preference concept was a bad idea or should be abolished.

Omnipoint today employs almost 100 people. The original six of us who started together still manage the company. Since receiving the tentative Pioneer's Preference award we have received dozens of congratulations and requests for advice from many other small companies. The primary question they ask is how to raise capital for their telecommunications ideas. What I tell them is that the Pioneer's Preference process works. The Pioneer's Preference is the only existing mechanism which offers a real opportunity and hope to entrepreneurial companies.

The Pioneer's Preference concept has had considerable opportunity for debate and comment. It had a year of gestation before it was even proposed. It had another year of comments and replies from over 60 companies before being adopted, and it is now 2 years old as a rulemaking. For 50 years the Government has granted, not sold, licenses. The evolution of the PCS industry has proven that the Pioneer's Preference can make a tremendous contribution to creating value in spectrum, and it is therefore also a natural complement to auctions.

We all need to recall that in the beginning the vast majority of U.S. companies did not believe that PCS could be introduced in the United States. Today many of those same critics eagerly await the opportunity to buy the PCS licenses. But without the Pioneer's Preference incentive, and without the PCS pioneers, how much would anyone have paid for the spectrum that may now raise millions, if not billions, of dollars for the Government?

Going back to my original analogy, imagine if after everyone saw the Macintosh's innovativeness and value the Government told Apple that its reward was that it could bid against IBM and every other company in America for the right to the shelf space for its own product. The value which the Government will be auctioning off will not be some raw value of the spectrum. An auction of spectrum for PCS will be bringing the ideas of those who have made PCS happen, or they will be pricing the ideas of those who have made PCS happen.

The FCC has already put into place a procedure—the Pioneer's Preference—that recognizes the contribution of innovators. This Congress should feel comfortable that auctions and Pioneer's Preference can work together to produce a spectrum allocation process that can achieve the multiple goals of revenue generation, diversity and innovation.

Thank you.

Mr. MARKEY. Thank you, Mr. Smith, very much.

[The prepared statement of Mr. Smith follows:]

DOUGLAS G. SMITH
PRESIDENT
OMNIPPOINT CORPORATION
BEFORE THE
SUBCOMMITTEE ON TELECOMMUNICATIONS AND FINANCE
COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES
APRIL 22, 1993

Chairman Markey and members of the Subcommittee:

Good morning, I am Douglas Smith, President of Omnipoint Corporation, a small, entrepreneurial, high technology company focused on developing new wireless, digital, communication products and services. Omnipoint developed the first spread spectrum pocket phone system for PCS, has been operating experimental PCS systems for over a year in the 1850-1990MHz band which has now been designated for PCS, and was awarded a Tentative Pioneer's Preference by the FCC for its work in helping bring PCS closer to a commercial reality. We appreciate this opportunity to present a perspective on how small entrepreneurial companies may view and be affected by the proposed legislation authorizing competitive bidding as a means of allocating rights to use the radio spectrum.

Although competitive bidding legislation will potentially affect all RF licenses and applications, there is a special historical linkage between the evolution of the Personal Communication Services (PCS) industry, Pioneer's Preferences, and thinking on the use of spectrum auctions. All three concepts have struggled in parallel to reach maturity, and in many ways are inextricably linked. In order to understand the obstacles facing small entrepreneurs, we believe it can be enlightening to review the history of PCS and how Pioneer's Preferences shaped that history, using our own experience as a case study. Attached is a chart chronicling the history of PCS and Pioneer's Preference.

Discussions on licensing PCS are now into their fifth year. They began when the United Kingdom first announced its intention to license PCS operators in January of 1989. In 1989 Omnipoint had six employees and a prototype of a new wireless technology

based on spread spectrum theory. Spread spectrum was primarily a military communications technology and was widely viewed as being too complex and expensive to use for consumer applications. Omnipoint had focused on developing innovative techniques for making spread spectrum practical for commercial use. One of our first applications was to demonstrate a new means of delivering digitized voice, data, and video wirelessly to pocket sized devices.

At that time, Omnipoint was in a position similar to hundreds of other small firms that spring up in every high technology industry in the U.S.: we had unique ideas and no money. None of us took salaries for the first two and a half years of the company's existence. Some of the engineers double mortgaged their homes and delivered pizzas at night to survive. We had a vision we believed in, but we had chosen an industry which has a unique road block to bringing entrepreneurial RF service ideas to market. Unlike any other industry, the RF industry presented us with no visible means of obtaining access to the only distribution channel -- i.e., the radio spectrum -- required to use and deliver our technology. It was as if when Apple Computer invented the Macintosh it had no means of obtaining access to the shelf space in the nation's only retail distribution channel.

In July of 1989 the FCC held its first meeting on what would later become known as PCS. Although it was one of the most heavily attended meetings in the history of the FCC, there was very little experimental activity by U.S. companies in the months following. Even when the U.K. awarded three licenses to operate Personal Communication Networks, Omnipoint could still not convince any U.S. companies to purchase and trial Omnipoint's experimental phones for use with PCS networks serving the public.

The reasons for the lack of willingness to experiment all centered around the simple fact that no company had any way of knowing that it could ever obtain a license to the radio spectrum. As all of you know, comparative hearings had failed to reward those who went first, and lotteries completely removed any rational reason to spend money to prove a new RF telecommunications idea. Thus, despite enormous industry media coverage of PCS, only five U.S. companies requested experimental licenses during the first fifteen months of the PCS industry's existence.

Everything changed in April of 1990 when the FCC announced that it intended to create the concept of Pioneer's Preferences to reward innovators in the use of radio spectrum. Over the following 12 months as positive industry comments and replies poured in to the FCC, the Pioneer's Preference idea caught on and evolved into the first true incentive system offered to the

entrepreneurial risk takers. If merited, the preference reward promised the recipient the right "to file a license application without being subject to competing applications."

The Pioneer's Preference incentive system literally launched the U.S. PCS industry. During the first 12 months following the announcement of the Pioneer's Preference proposal, 60 companies requested licenses to perform PCS experiments. This was considered to be an unprecedented number of experimental license requests for a single service. Yet when the text of the Pioneer's Preference Rulemaking was announced in April 1991, an additional 45 companies filed experimental requests in just four months.

During the early months after the Pioneer's Preference concept was put out for comment, Omnipoint had begun to gain customers for its spread spectrum prototypes. Then, almost immediately after the promulgation of the Pioneer's Preference rules, Omnipoint made the decision to seek what for it was a significant capital infusion. At that time the FCC had still not given any indication what frequency band would be chosen for PCS, or even if PCS would be allocated spectrum. Moreover, the recent results of certain tests in the 1850-1990Mhz band had met with enormous criticism regarding the technical feasibility of using that band for PCS. Despite that, Omnipoint took the enormous capital risk and committed to developing and deploying a PCS system that would work in that frequency range.

Omnipoint spent more than \$12 million to develop its unique PCS pocket phones and data systems. We developed a technological approach which has now been independently proven by others to minimize interference to the incumbent microwave users and which promises to dramatically reduce the network costs of delivering wireless services. Our goal was and is to reduce the monthly and per minute costs of PCS services, thereby enabling a true consumer market to enjoy the benefits of wireless portability.

We knew that we might not succeed in obtaining a Pioneer's Preference, but the potential reward of the Pioneer's Preference warranted the development risk. This was obviously true for other companies as well. It is particularly interesting to note that the number of experimental license requests made per month was virtually unaffected by the announcement of the PCS Policy Statement in October of 1991 or even the PCS NPRM in August of 1992. In contrast, it was the Pioneer's Preference announcements which influenced the rate of experimental activity. After the initial surges already mentioned, the requests for PCS experimental licenses plummeted following what appeared to be an initial deadline for filing experimental license requests that was widely misinterpreted as applying to Pioneer's Preference requests for PCS. When the Pioneer's Preference rules were

clarified in late February of 1992 there was another spike in requests. But the final surge in PCS experimental license requests occurred on the May 4, 1992 deadline for filing Pioneer's Preference requests related to PCS. An additional 30 PCS experimental license requests were made on that single day.

Altogether, over 200 experimental license requests have been made regarding PCS. It has been estimated that over \$200 million worth of experiments were conducted. Nearly 100 companies filed applications for a PCS Pioneer's Preference. No company during the comments and replies on the FCC's tentative PCS awards said that the Pioneer's Preference concept was a bad idea or should be abolished. Almost all of the comments were from applicants who felt they too deserved a preference. Despite all the debate regarding Pioneer's Preferences, very few commentators criticized the winners. In Omnipoint's case, for example, only four companies out of the 100 that participated in the PCS Pioneer's Preference process challenged in any way our selection.

Omnipoint today employs almost 100 people. The original six of us who started together still run and control the company. Since receiving the Tentative Pioneer's Preference award we have received dozens of congratulations and requests for advice from many other small companies. The primary question they ask is how to raise capital for their telecommunication ideas.

What I tell them is that the Pioneer's Preference process works.

Which leads to the topic facing this Committee - spectrum auctions. The primary road block which has faced RF entrepreneurs resulted from the failings of the prior comparative hearing process and the randomness of lotteries. No entrepreneur endorses using those past methods without significant modifications to them. Yet no entrepreneur I know thinks auctions are a great way to allocate rights to the spectrum either. There is no incentive value to creating an innovation when the benefits will be auctioned off to others who can afford to buy the only distribution channel.

The U.K. went from PCS concept to PCS licenses in 11 months using a form of expedited comparative hearings. Perhaps we should also be exploring ways to improve our comparative hearing process. Creating auction rules will no doubt introduce delays, surprises, and new problems. But since auctions appear to be on a train which has already left the station, let me address them from the perspective of an entrepreneur.

The members of this Committee have shown a tremendous interest in seeking suggestions on ways to achieve diversity in

the award of licenses and to inspire the innovators. The inability for unrestricted auctions to achieve diversity can easily be seen from the recent experience with lotteries. Lotteries are often criticized as resulting in nothing other than private auctions. If we look at what happened in the "private auctions" in the cellular industry we discover that the seven RBOCs, GTE, and now ATT/McCaw control 85% of the cellular subscribers and 90% of the territory, and the "pops." Without measures taken to modify auctions, why will government auctions for PCS result in any different outcome? Who precisely is it that can outbid these nine companies and why haven't they participated in the "private auctions"? In New Zealand, despite an attempt at safeguards, when the second AMPS cellular license was auctioned off the winning bidder ended up being the owner of the original AMPS cellular license, which had not been subject to auction.

The desire to achieve diversity in the context of an auction system leads one to explore alternative payment mechanisms such as royalties and installments. However, these mechanisms will require substantial thought, creativity, and "debugging" to achieve their goals. Entrepreneurs have no way of knowing that such mechanisms will really offer them a way to benefit from their efforts.

The Pioneer's Preference is the only existing mechanism which offers a real opportunity and hope to entrepreneurial companies. The Pioneer's Preference mechanism is not hypothetical. The concept has had considerable opportunity for debate and comments. It had a year of gestation before even being proposed. It had another year of comments and replies from over 60 companies before being adopted. And it is now two years old as a rulemaking. Seven decisions have been made in five separate licensing dockets.

Some are now suggesting that there is something odd about Pioneer's Preferences in a world of auctions. But it is not the idea of rewarding innovation and granting licenses to meritorious entrepreneurs that is the change. That was the intent of the Communications Act. The change is the notion that from now on the licenses should only be awarded to those willing to pay the most money. For 50 years the government has granted, not sold, licenses. For example, the seven RBOCs and GTE were given their original cellular licenses for free, not subjected to competitive applications of any kind, and were given a multi-year head start in offering service. In the historic context, a Pioneer's Preference is a natural and well grounded solution for rewarding innovative entrepreneurs.

The evolution of the PCS industry has also proven that Pioneer's Preferences can make a tremendous contribution to creating value in spectrum, and is therefore also a natural

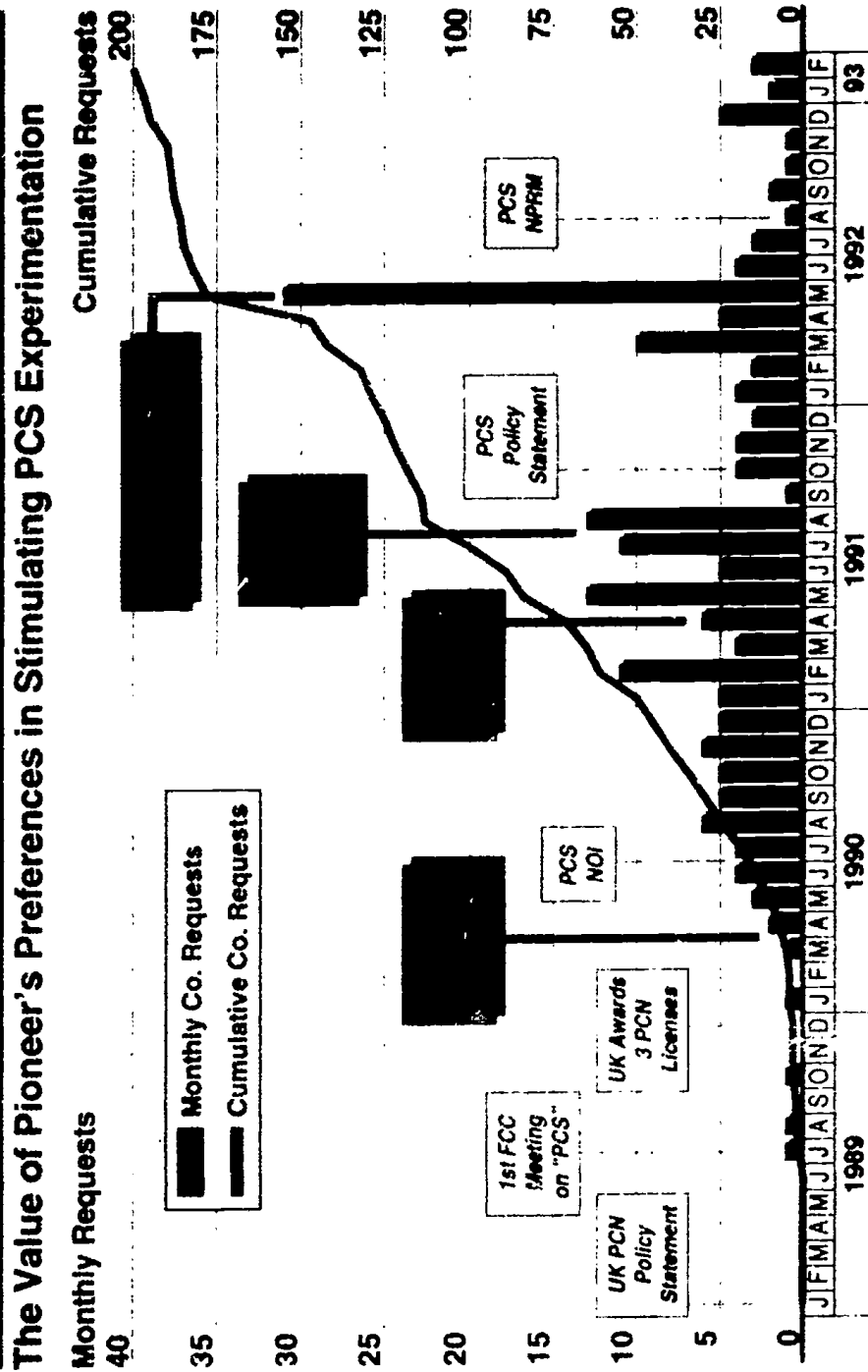
complement to auctions. When PCS began in the U.K., the vast majority of U.S. companies did not believe that it could be introduced in the U.S. As previously noted, for well over a year almost no U.S. companies performed any experiments. Even after the proposal regarding Pioneer's Preferences gave companies an incentive to try to solve the problems facing PCS, many companies did not believe the vision of PCS had any value. Some companies said it was impossible to find spectrum for it. Some said that the propagation characteristics of 1.9Ghz would make it impossible. Some said that it could never be economic because it would require too many small cells. Many cellular incumbents said there was no market for it or that cellular was already offering PCS. Several major companies even stated that spread spectrum technology could not be used in pocket-sized phones.

Today, many of those same critics eagerly await the opportunity to buy the PCS licenses. But without the Pioneer's Preference incentive, and without the PCS pioneers, how much would anyone have paid for the spectrum that will now raise millions, if not billions, of dollars for the government if auctions are applied to allocating spectrum for PCS?

Going back to my original analogy, imagine if when Apple Computer introduced the Macintosh, it had to go through five years of convincing the government that it was a good idea to allow it to be sold through the nation's only distribution channel. Then after everyone saw the Macintosh's innovativeness and value, imagine telling Apple that its reward was that it could bid against IBM and every other company in America for the right to the shelf space, or to even match what someone else might pay to prevent it from getting shelf space. Would we have had innovation and diversity in the Personal Computer industry?

The value which the government will be auctioning off will not be some raw value of the spectrum. It is easy to forget that the radio spectrum was always there. Indeed the future PCS spectrum was already being occupied by users who not only did not pay for it, but for which there were no "private auctions" since there was no significant perceived value. An auction of spectrum for PCS will be pricing the ideas of those who have made PCS happen.

The FCC has already put into place a procedure - the Pioneer's Preference - that recognizes the contributions of the innovators. This Congress should feel comfortable that auctions and Pioneer's Preferences can work together to produce a spectrum allocation process that can achieve the multiple goals of revenue generation, diversity, and innovation, thereby serving the public interest.



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Mr. MARKEY. Our next witness, Mr. Goodfellow here, is chairman of RadioMail Corporation, from Menlo Park, Calif.

Welcome, sir. You have 5 minutes. Whenever you feel comfortable, please begin.

STATEMENT OF GEOFFREY S. GOODFELLOW

Mr. GOODFELLOW. Thank you. Hi. My name is Geoff Goodfellow. I am Chairman and founder of RadioMail Corporation. I have been involved in wireless data communications since the early 1970's, when I dropped out of high school to work at SRI International and was exposed to AlohaNet, the very first packet radio data network system.

RadioMail Corporation is currently providing wireless electronic mail services to more than 1,000 subscribers over the existing ARDIS, RAM, SkyTel nationwide mobile data communications networks, as well as regional, local and one-way paging and two-way wireless delivery systems.

I started RadioMail in 1988 out of a spare bedroom in my house with a \$50,000 loan from my family. Last month RadioMail concluded its initial round of outside financing with \$2 million from Motorola and \$1 million from a Danish investment firm, 2M Invest. RadioMail currently has 11 employees, and expects to grow to 25-30 by the end of the year.

I believe RadioMail is the kind of entrepreneurial company that will benefit from the diverse and highly competitive personal communications services industry that is now emerging. In turn, the Nation will benefit through the contribution of companies like RadioMail make to the economy and to the Nation's technology base.

I would like to add that the statements included herein are my own and do not necessarily represent those of RadioMAIL Corporation, its board, business partners, customers.

I have two proposals to make. First, the Federal Communications Commission should continue to encourage innovation by awarding Pioneer's Preference to entrepreneurs who develop new and innovative uses of spectrum; and, second, that the spectrum auction should be structured to provide for a limited number of nationwide carriers with the balance allocated to regional, statewide, citywide, and on-campus systems.

Innovation and conservation. Pioneer's Preference should continue to be awarded for innovative uses of spectrum that are novel in their application and parsimonious in their demonstrated use of this precious resource. After pioneers are accommodated, other parties should be able to license spectrum for the same type of services through competitive bidding.

This brings the laws of economics and reward into play. The entrepreneur is rewarded for innovation with a "free" allocation, while other service providers and users can gain an allocation through a competitive bidding process.

Because non-pioneers will have to pay for the spectrum, only serious candidates with checkbook firmly in hand will apply. Pioneer holders, on the other hand, will be motivated to build out as soon as possible to get a head start on those who won allocations via the bidding process. The bid winners, on the other hand, will be en-

couraged to build their systems as soon as possible, to catch the pioneers and to begin earning revenue from offering of the services.

In the matter of spectrum auctions, some type of spectrum auction is a welcome mechanism for allocating frequencies, especially for personal communications services, or PCS. Auctions coupled with Pioneer's Preference awards will provide the needed income for the Government through a fair and open procurement process.

Before these auctions are implemented, however, decisions must be made about what levels and types of service we can expect PCS providers to offer the general public. If the spectrum is auctioned off piecemeal, without a plan focused on how the various systems will be constructed and what services they will provide, the process could result in chaos.

A brief historical perspective. Today, we have nationwide, regional, citywide, on-campus one-way paging systems that resulted from the vast differences in user requirements. We also have nationwide, regional, citywide, and on-campus wireless two-way data-only networks. Of these, the nationwide networks of RAM, Mobile Data and ARDIS are by far the most robust.

Cellular, on the other hand, began as a regional voice system with the expectation that the regional providers would work together to provide "seamless" nationwide cellular service. This has not happened. While a cellular phone can be used almost anywhere in the country, it is not always easy and billing is far from consistent.

What is needed. Based on what I believe end users' needs will be for these new services, it makes the most sense to provide a limited number of nationwide carriers while the balance of the spectrum is allocated to a number of regional, statewide, citywide, and on-campus systems.

Nationwide carriers should be required to provide seamless, common access service and billing across the Nation. In addition, they should be required to interconnect to any regional service providers who make the request.

The regional, citywide and on-campus systems providers should likewise be required to provide interconnections that accommodate end user choices of service.

The number of regional and citywide providers should be limited, although the number should be larger than the nationwide carrier number of three. The number of on-campus providers should be unlimited because most of them will occupy the unlicensed PCS spectrum proposed by the FCC.

Given this infrastructure, auctions will be broken down into the same classifications: nationwide, regional, statewide, citywide, and local. Such auctions will, by nature, provide access to large and small companies in each area of service.

Conclusions and recommendations. If we do not specify multiple levels of service before holding auctions, we could be faced with hundreds of service providers, each promoting their own favorite communication technology in its own prime coverage area. Nationwide PCS service will be impossible in the short term, and possible in the long term only as a patchwork quilt of providers and levels of service.

We must first define the required levels of service and establish an auction process that matches these requirements—perhaps with different procedures for each level so that even the smallest companies, for example, can compete for local market systems.

Nationwide PCS systems are absolutely required to foster the growth of the industry. Failure to establish requirements for a number of carriers to provide these services will not only stifle the growth of PCS, but could impact the overall success of regional and citywide systems as well.

In closing, I believe that the wireless data industry is now where the cellular phone industry was 10 years ago. Ten years from now it will be where the computer industry is today. Let's get going.

Thank you.

Mr. MARKEY. Thank you, Mr. Goodfellow, very much. Our final witness on the first panel is Jack Pellicci.

Mr. PELLICCI. That is correct.

Mr. MARKEY. Jack Pellicci, who is the vice president of Business Development from Oracle Corporation here, from Bellevue, Washington.

Welcome, sir.

STATEMENT OF JACK PELLICCI

Mr. PELLICCI. Mr. Chairman and members of the committee, I thank you very much for the opportunity to testify today in place of my colleague Dick Brass, who is recovering from surgery. As the chairman indicated, I am the vice president for Business Development at Oracle.

Oracle is the largest vendor of database software and services in the world today. Our software is used for telecommunications, for data storage and transmission, and in the building of new data superhighways and networks, both wireline and wireless. Even though we are now classified a big company, we remember our modest beginnings just 15 years ago. Our success is inextricably linked to strategic partnerships with companies such as Omnipoint and RadioMail.

Are spectrum auctions good public policy? I think they are. Although they may be difficult to administer, we simply have reached the point in our deficit crisis where we can no longer rationally exclude them. The radio spectrum belongs to the Nation. If we can squeeze a few extra billion dollars out of spectrum distribution without negative consequences against the economy or anything else, auctions are appropriate. I think the administration and the Secretary of Commerce have not received sufficient public recognition for the courage they have shown in championing this controversial proposal.

The chairman and the committee are also to be highly complemented for recognizing the great public importance of spectrum auctions and for arranging these proceedings to hear a variety of viewpoints.

Mr. Chairman, there are auctions and there are auctions. There are public auctions, and sealed-bid auctions. These are cash auctions and bond auctions and something called a Dutch auction, which is neither Dutch nor really an auction.

The problem with cash auctions is that there is absolutely no historical correlation between having useful ideas and having cash. In fact, it is often pretty much the opposite. The history of American enterprise and invention has infinite examples of great ideas owned by folks with weak credit. Ford and Edison were initially dismissed by the business community of their time. Chester Carlson, the inventor of xerography, spent more than 20 years unsuccessfully beginning the richest companies in America to take a flyer on his dry copying concept. Eventually, an obscure specialty shop in Rochester backed the invention and changed the world. IBM could have funded the project, but they thought that carbon paper was very cheap and would persist.

The Oracle Corporation, for whom I work, was founded by a small group of programmers and entrepreneurs the size of the two companies that have spoken before me led by Larry Ellison, our CEO. They brought to market the first relational database, the first Structured Query Language products, and now the first databases for massively parallel processing computers, and in the process Oracle has become the third largest software company in the world, as well as the world leader in databases, employing more than 8,500 people.

This is a particularly good example because the mathematical concept of the relational database was published originally by IBM, the same firm that rejected Chester Carlson. In fairness, I should also point out that this sort of oversight is not the exclusive property of IBM. Xerox itself set up a special laboratory in California to foster innovation. During the 1970's this lab, called Xerox PARC, developed the first graphical computer interface and many other important innovations. Xerox, which had entered the same rich leagues as IBM, failed to exploit most of their own lab's breakthroughs.

Most new companies don't make it. Most have barely enough money to pay rent. They do not have enough money to outbid an IBM or the Hunt brothers in a spectrum auction. Insisting that they do will produce two terrible results. Young, innovative companies with bright ideas will be shut out. Large firms suffering various stages of corporate senility will alone shape the future of telecommunications. Moreover, speculators will bid up spectrum prices periodically, and they will crash periodically, wiping out entire enterprises and destroying jobs.

The notion of a cash spectrum auctions derives in part from our long history of public land and resource auctions, most of which are conducted COD. In 1979, then President Jimmy Carter told Congress to authorize the FCC to use auctions "just as similar tools are employed for oil leases and other limited natural resources."

Unfortunately, the analogy is not apt. If a wildcatter drills for oil in a reckless manner, he can wreck the well and make the oil unrecoverable. The Government has no choice but to demand payment up front for an oil lease. With radio waves, no matter what junk you broadcast, your chunk of the spectrum will still work tomorrow. You can waste it, but you can't use it up.

Because spectrum can be reclaimed from a failed user or from an improper use, there is no need for the Government to demand cash for its auction. The Nation can afford to and should experiment

with other forms of payment as well. And I believe these forms of payment, in addition to some cash bids, will stimulate more business, more jobs, and better innovations. They may serve public policy better, and they will ultimately bring in more revenue to the Government.

We need to be innovative in the way we approach competitive bidding for spectrum. For example, applicants might be allowed to bid a future royalty interest in lieu of cash up front. A firm desiring to operate a new messaging service might offer 1 percent of its gross income to the Government. Various economic alternatives are possible, which experts at the FCC could assess as they now interpret technical radio issues. Royalties might begin immediately or after some fixed period or on the arrival of profitability. They might be assessed on net or gross income. The percentage offered might be set by the bidders or fixed for a given service.

One interesting thing about royalties is that they will almost always total far more cash than a cash auction bid over time. Imagine how much your rich uncle might have bid for a Washington, DC, TV channel after World War II. Twenty-five thousand dollars, perhaps? Maybe even \$50,000? A royalty equal to even a fraction of 1 percent of the station's gross revenues from that time would have generated millions and millions of dollars.

Applicants might also be allowed to bid a certain amount of their services' time or throughput for public use or benefit. Applicants might be allowed to bid some deferred lump sum payment due after a period of time, as is common in many real estate transactions. Some non-auction set-aside might be created for services of high public benefit.

Under any auction scenario, the Pioneer's Preference system should and must be preserved and expanded to provide spectrum without any additional auction or royalty cost to those who deserve it most: pioneers who have developed an important new technology or type of service.

The current Pioneer's Preference program provides a certain grant of license to applicants who have demonstrated innovative new technology or services. Additionally, escape from auction or royalty fees imposed on others, permanently or for a certain period of years, would strengthen the incentive and produce a flood of important new products.

Conversely, it would be a terrible shame to undermine this important and innovative Pioneer's Preference system by assessing the winners' fees equivalent to an auction bid, as has been suggested by some. It is no advantage to be a pioneer if, after winning, you have to pay the same price as everybody else. The Pioneer's Preference program was developed to prevent the spectacle of an innovator cut out of the industry that he or she invented when licenses are finally awarded. It is just as bad to disenfranchise the pioneer by demanding a huge up-front fee a pioneer probably can't afford.

A good example of pioneers, Mr. Chairman, are right before, the two gentlemen to my right. One in particular that I know the case of, Doug Smith, whose Omnipoint firm developed the implementation of this important digital radio technology called spread spec-

trum. After 31 years in the military, I knew what spread spectrum was—spread spectrum.

Mr. MARKEY. Say that 10 times.

Mr. PELLICCI. Ten times? I can't say it once, Mr. Chairman.

But for that time, you know, we limited the use of that, and now we have pioneers out there like Doug doing what he is doing. And the Federal Communications Commission has awarded Omnipoint a Pioneer's Preference in the new PCS band. That preference began in Doug's apartment in Boston just a few years ago.

Mr. MARKEY. If you could wrap up, please.

Mr. PELLICCI. In summary, we believe that there are a number of ways to compensate the Government for use of valuable spectrum while at the same time promoting entrepreneurship which will result in both better service to the citizen and an increased national competitiveness.

Thank you again for this opportunity.

Mr. MARKEY. Thank you, Mr. Pellicci. I will now turn to questions from the subcommittee. Let me go to you first, Mr. Goodfellow. You are mentioned as someone who is providing a vision of what the wireless future could look like in the United States. What can, in your opinion, the Federal Government do in order to ensure that we have that vision come to pass?

Mr. GOODFELLOW. Well, as I stated, one certainly is keeping the Pioneer's Preference in place which will incent the entrepreneurs who don't have very much money to be able to do the type of things that myself and Mr. Smith have done and be able to get spectrum. And the other is, you know, to work—to have the FCC be the people who set those policies through the usual suspects of trade associations and interested parties and things like that.

Mr. MARKEY. Mr. Smith, without a Pioneer's Preference, what is the likelihood that companies such as yours or Mr. Goodfellow's or Oracle itself, which is still not a company that is, in size, comparable to the larger telephone companies or the Motorolas—what chance do you have to compete in this new world of wireless?

Mr. SMITH. Well, I think the answer of competing against very large companies in auctions is obvious. It all depends on how the auction rules are structured. Lotteries were criticized in part because they were private auctions, and if we look to what happened in the private auctions, the seven RBOCs and GTE and now ATT/McCaw own 85 percent of all the subscribers and 90 percent of all of the pops. So, you know, what in a public, Government auction—why wouldn't the results turn out any different? Why wouldn't it end up with the same buyers? Where are all the people that are going to buy these things that didn't show up in the private auctions?

So for small companies to participate, there are a lot of potential creative ideas in royalties and in installment payments, but those haven't been worked out yet. And I think the answer to your question is that if there hadn't been Pioneer's Preference—as this demonstrates, one of the reasons why nothing happened for 15 months is how else could you get a license? And if the only alternative is build it all, pioneer it all, and then bid against the same people, no one is going to do it either. So I think the answer to your ques-

tion is you have to put in structures that are going to allow people a reasonably—they are going to get a license.

Mr. MARKEY. So your contention is that the PCS revolution was born from the Pioneer's Preference?

Mr. SMITH. It was launched. I don't know about born from. Obviously, there were people talking about it for 15 months before Pioneer's Preference. But again, I can't overestimate the historical fact that most people did not believe PCS could happen in this country. There were too many problems: incumbent microwave users, propagation characteristics. A major telecommunications said nobody could put spread spectrum into a handset.

Mr. MARKEY. Who thought that there were too many problems?

Mr. SMITH. You can look at the comments that were filed at the FCC over a period of months.

Mr. MARKEY. Which companies are you talking about, so we can understand what it is that you are referring to?

Mr. SMITH. Well, I am not sure I should cite any specific company. The comments are there in the public record. But there were a number of large companies that either said—

Mr. MARKEY. Would they be well-known or major American companies that—

Mr. SMITH. That have telecommunications and interest in that spectrum. I think that you will find that the most outspoken against PCS were indeed the most incumbent, who already had things, either spectrum or otherwise.

Mr. MARKEY. Well, let me move on. Mr. Pellicci, can you be more stark, perhaps? Your testimony was pretty much to the point.

Mr. PELLICCI. Yes.

Mr. MARKEY. Can we name some names here about dividing the world into the large, the middle, and the small, so that we can understand, in your opinion, how each of them would have, for example, viewed the PCS revolution or any other subsequent revolution unless we are very careful in terms of how we structure the auction rules?

Mr. PELLICCI. Mr. Chairman, I—as Doug just pointed out, I don't want to be in the position of naming specific names.

Mr. MARKEY. Can I tell you something? I think the very fact that you are all in this situation gives us, you know, pretty obvious—the code of Omerta is being invoked here to the thousandth power. And it is a good, lesson to us all with regard to the clout which the telephone companies, the clout which the larger telecommunications companies have in terms of your ability to be independent of them and to survive without their cooperation. So that is something I think we have to take into account when we do these auction rules. Please continue.

Mr. PELLICCI. But I would like to just add that there are these very large companies that you are talking about. There are big companies such as Oracle and then there are the small companies, the emerging entrepreneurs, such as the two companies here to my right. But I think the key point here is that very large companies, big companies and the small companies in today's environment, the success of all are dependent upon the partnerships, the strategic partnerships that are built between the various companies. And I think that is becoming very, very clear.

We at Oracle, even though we are a billion and a half dollar company, we still consider ourselves innovative and entrepreneurial, and we depend on these strategic relationships very much. And we certainly don't consider ourselves out of the realm of some day looking at for certain things that we do in the PCS arena in partnership, stimulating that Pioneer's Preference for ourselves and our partners.

Mr. MARKEY. So you want strategic relationships but you don't want shotgun marriages?

Mr. PELLICCI. Exactly.

Mr. MARKEY. Is that what you are saying?

Mr. PELLICCI. Yes.

Mr. MARKEY. Yes. And I think that you, Mr. Smith, and you, Mr. Goodfellow, you feel the same way; right?

Mr. GOODFELLOW. Absolutely.

Mr. MARKEY. You want to have the law that will give you the freedom to innovate but not necessarily force you to partner with people you don't want to partner with. And I think that is a fair request to the Congress as we consider this legislation.

My time has expired. Let me recognize the gentleman from Ohio, Mr. Oxley.

Mr. OXLEY. Thank you, Mr. Chairman. Mr. Smith, how should the awarding of Pioneer's Preference be harmonized with a spectrum auction? Are they mutually exclusive, or are there ways that in your estimation we could bring those to some form of harmony?

Mr. SMITH. Well, I think they are—perhaps unexpectedly so, but I think they are very much in harmony. The goals that the auction process are trying to achieve are basically threefold: deficit reduction, trying to distribute licenses in a way that perhaps is more fair than lotteries or comparative hearings, and the public interest of how do you allocate spectrum to achieve diversity and innovation.

Again, I hate to keep going back to PCS, but you have had a test case. Whatever the value of PCS is today it was a fraction of that 5 years ago. The Pioneer's Preference incentive is what drove people to try and figure out how to solve the problem. So it raises the value of everything, which helps with budget deficit reduction when you go to sell it off.

The second point is that, again, you are dealing with a fairness doctrine. How do you allocate licenses? Lotteries have obviously got problems. Auctions are going to have unfairness. The playing field is inherently unlevel. People have money, people have assets they can leverage to do these things. So the Pioneer's Preference is a way of balancing that.

And the third point is the public interest, which is how else are you going to achieve diversity and give an incentive system to the pioneers who will come up with the ideas that you are going to auction off in the future. So I think they are very much in sync with one another.

Mr. OXLEY. Are you aware of the other companies that were involved in the pioneer process with you, and perhaps ones that didn't make the grade?

Mr. SMITH. There were 97 companies that applied for Pioneer's Preference. I am aware of some of them, but I am not aware of all of them. No.

Mr. OXLEY. And how many of the 97 were eventually awarded the Pioneer's Preference?

Mr. SMITH. There were, I believe, three in the PCS process, and in other proceedings—there have been five dockets that are completely different besides PCS. There were four other dockets that have been ruled on and there were three other Pioneer's Preference in each of those.

Mr. OXLEY. So, essentially, there were some winners and a lot of losers in that process; is that correct?

Mr. SMITH. By definition of the Pioneer's Preference, as it was stated, it was to be a reward only for true proven significant innovation and held out as that.

Mr. OXLEY. I mean a lot of those people that didn't make it thought that they were the answer, didn't they? I mean they wouldn't have gotten in the game in the first place if they didn't.

Mr. SMITH. And that is true of any competition that has only a few number of winners. You all know when you enter the rules—when you enter into the competition that only a small number are going to win. I have no opinion on the judgment call of the expert agency on the other selectees. I can't make that call. I didn't have the information.

Mr. OXLEY. Let me ask all of you, if you will, to comment on a royalty payment system as part of this process. That is, you say to address the problem of deep pockets versus no pockets, established technology versus new technology, if you will, how would you recommend that we proceed with that? Obviously, this is one way that we are looking to try to level the playing field, if you will; to try to get the best and newest technology and at the same time create some equity in the process.

Mr. Pellicci, you want to tee off on that?

Mr. PELLICCI. Yes. As I understand what you just said, you are talking about sort of the reverse loyalty of the company providing the royalty back to the Government for extension of preferable circumstances in starting their business or getting allocation of spectrum.

Mr. OXLEY. Yes. Your comment I think was interesting about the TV license in Washington, DC.

Mr. PELLICCI. Yes.

Mr. OXLEY. That is, that the FCC determines that this particular technology will be beneficial. They are kind of betting on the come, if you will. The company is successful and then they pay royalty to the taxpayers essentially for their success.

Mr. PELLICCI. Exactly. And certainly we—as I mentioned, we support that heartily. And I think the Government is building an annuity. You know, the technology is a fine technology. We know that the PCS revolution is coming. We know that allocating competitively and giving fair conditions to the small companies for access to the spectrum is the right thing to do. And I think over the next—if you sold the spectrum for \$4 or \$5 billion, and you took cash up front, you would get four times that amount if you annuitized it with favorable conditions to companies such as the two sitting to my right.

Mr. OXLEY. On the other hand, what if the FCC made a mistake and that was a big flop and they didn't make a dime, what kind

of process would you recommend that the statute provide in those kind of cases?

Mr. PELLICCI. Well, I find it hard to—I realize that is a hypothetical situation. I certainly don't think that is going to happen based on my experience and what I know about the situation. But, you know, I am certain that the Government develops ways of controlling relationships, partnerships, and even in this case for the spectrum bidding there could be conditions established that, if it is a flop, that something could be done to terminate that relationship or to recoup the frequency, get it back or do something.

Mr. OXLEY. OK. Mr. Goodfellow?

Mr. GOODFELLOW. I think annuity streams are great things because it allows you to make money while you sleep. And that is why I am in business, because I like to make money while I sleep, and I don't see why the Government can't do the same thing.

My position on the annuity thing is how do you prevent it from becoming a free-for-all? How do you do some type of competitive bidding? Is it on one person pays 2 percent, one person pays 1 percent? How do you adjudicate that? So what type of opening do you incur into the process for a lot of people to get in and start competing in that area?

As far as making mistakes, I actually think mistakes are great things. I make them all the time, and I learn a lot from my mistakes. And I think if mistakes are made, then the Government changes. So I think this is an iterative learning process. I think as we go forward clearly we are going to make mistakes. People might consider lotteries have been a mistake, and that is why we are looking at auctions now. And me personally, as a businessman, I always learn the most when I make mistakes. I just try and do it so I don't burn the whole company in the process.

Mr. OXLEY. Good point. Mr. Smith?

Mr. SMITH. I think that it is clear that if you are going to attempt at all to counterbalance just who can put up the most money on the table if you are going to have to look at creative ideas. Royalties, however, I have to say I share the opinion of Mr. Goodfellow on the following topic. I think it needs a lot of work. I think it needs a lot of people to think about how are you going to implement it so that the Government can actually choose between competing bids, for example, of two different royalties.

It is my understanding for the reason why comparative hearings failed because I came to Washington and said, Why can't we do this by human beings looking at the differences in judging? It was that it gets litigated. Every decision that the FCC makes gets litigated.

I guess I would look to this group to figure out how you can empower the FCC to make decisions that don't just immediately go into protective litigation. If royalties are used, how do you allow the FCC to make a decision that this was better this this? You have to empower them to make those things, I think.

Mr. OXLEY. Mr. Pellicci, did you have a comment?

Mr. PELLICCI. I just wanted to add one thing. You know, over the last several months it has been great, after many, many years in Washington, to really see the spirit of an entrepreneurial government coming to the forefront, and I think the important thing is

that if there is a failure, the government is a partner in good and bad, and to stimulate entrepreneurship, when the government becomes a partner it is not business as usual. It is business as unusual. And I think that this committee has to take the position that if we are going to stimulate entrepreneurial government there are some risks, and you all have to share in those risks with us.

Mr. OXLEY. Well, I have some sympathy for that. However, it might be a little hard to explain to my taxpayer constituents that they are somehow taking a risk. It is one thing to buy stock in an emerging growth company. It is quite another to expect your tax dollars to be used, perhaps, in a failed venture, and that clearly separates Government from the private sector, probably the most telling difference. It obviously makes our job that much more difficult. Because you just have to answer to your stockholders.

Mr. MARKEY. Would the gentleman yield?

Mr. OXLEY. Yes.

Mr. MARKEY. Let me try another formulation on you—if this works, to the panel. Would it not be the equivalent of, let us say, buying into the S&P 500? There are winning stocks and there are losing stocks in that whole package of 500. If we believe, in the wireless revolution, we believe, just on average, that at least 400 out of the 500 are going to be successful. There might be a hundred losers but on average the success rate is going up and you get the benefit having been an investor in this larger concept.

If after 3 years or 4 years or 5 years in our discretion in the committee we decide that if one of these investments does not work and that there has to be some kind of guillotine date on which the Government reclaims the investment. It just hasn't worked and it comes back to us after 3 or 4 or 5 years. But, we do believe generally that we are investing in something, this wireless revolution, that is going to give us a return, even if there are some failures in the context of a larger national success story.

Does that make sense to you as an analogy?

Mr. SMITH. It is very interesting that when they authorize pensions to invest in venture capital, your analogy, the venture capital industry exploded because the pensions could afford to take 5 percent of what was considered to be the most important thing to protect, the pension fund. And take 5 percent and risk it. So your analogy is extremely apt.

Mr. MARKEY. I thank the gentleman.

Mr. OXLEY. Well, I think the chairman makes a good point. My only other point would be that we are looking at the broad, literally the broad spectrum here, not just PCS technology. We are probably talking about things that nobody has even imagined, even these brilliant entrepreneurs that are in front of us. I mean that is essentially our charge, and it is indeed a very important one.

And I thank the Chair and yield back the balance of my time.

Mr. MARKEY. The gentleman's time has expired. The gentleman from New York, Mr. Manton?

Mr. MANTON. Thank you, Mr. Chairman. I have sort of a general question, and maybe it was answered before I came into the committee room by the witnesses.

How much of the spectrum that the Government proposes to re-allocate should go to Pioneer's Preference, in your view? Anybody have any thoughts on that? Mr. Smith?

Mr. SMITH. Since I am the obvious target—I don't think the Government thinks of it that way. It isn't a question of how much spectrum should go to it. They held out this hope and the chance of winning drew a lot of people into it, and they made a decision. But the rules of PCS, we don't even know how much they are going to allocate per operator or the size of the territory or the number of operators. We don't know what it is going to be yet.

So they didn't—the Pioneer's Preference was not held out as saying, We are going to set aside this much or that much. In fact, they might have not given any if there hadn't been any real innovation. So it was really a merit system on its own, not based on set aside percentages.

Mr. MANTON. No set-aside. No set percentage, in your view?

Mr. SMITH. I can't testify for the FCC, but no one I know thinks that that even entered their thinking, that they were going to basically take X percent and put it aside.

Mr. MANTON. Are their rules OK with you or do they require any changes in order to determine who should get Pioneer's Preference?

Mr. PELLICCI. I am not familiar, sir, with the process. I would just say that, in coming back to your initial question, that in trying to understand this better, if 200 megahertz are available for distribution, a TV station—you can get about 35 TV stations on to that. And how important is one TV station to X number of Pioneer's Preference, I don't know.

But there are variable amounts of spectrum required for various initiatives, and I think it has to be looked at in a balanced way. And I think that setting aside a specific amount, perhaps, could waste, while we are evaluating some of that. I think it is a tough question because you don't want to give it all away. Yet on the other hand you want some of the pioneers to have an opportunity at it.

Mr. MANTON. So we need a balanced approach.

Mr. PELLICCI. Yes.

Mr. MANTON. Thank you. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired.

Let me just further lay out, if I could, just so we can understand the issue a little bit better from the entrepreneurial perspective, so in the Pioneer's Preference area we have pioneers competing against other would-be pioneers, and a small percentage of those contestants win. The rest are left to their own devices. But at the same time, we might stipulate that a high percentage of those non-winning applicants could still run circles around the biggest 10 companies whose entrepreneur souls are not as fully developed as they could be.

And so we wind up with this dilemma where you have a Pioneer's Preference for the true geniuses, you know, the Edisons of our time, and then you just have the regular geniuses who are left out there without any ability now, without some kind of royalty or other scheme in order to get into the game.

And, if we decide that we are going to put a value on that, that is, these other 500 or 1,000 or 2,000 people out there who just don't

qualify for the Genius Of Our Time Award, you know, the top 10 or 15 or 20 companies, then we have got this dilemma in terms of ensuring that we are giving the proper incentive to these other 2,000 people as well, even as we let the Motorolas and the AT&Ts and the others play their role as well.

So that it seems to me this is the dilemma. Because without some way of dealing with that other category, which is much, much larger than this Pioneer's Preference category, but in many ways, potentially because of its volume, much more significant because of the contributions which they could make, that without devising some way in which we can think through how they, as well, could be participants and could be protected, then I think we have some problems that we could be creating for ourselves.

Do you agree with that, Mr. Pellicci?

Mr. PELLICCI. I do. And I think one of the things that I feel would be very helpful would be to empower the FCC to develop an evaluation process that contributes to identifying the right pioneers to reward, but also link to that selection an opportunity for those, as you put it, that just at that time weren't the true geniuses but have something brewing. Now that is a big tall order, but I think the FCC has very talented people, and I think if empowered, and if looked at, and how they bring this to bear, could develop an evaluation process like that.

Mr. MARKEY. Thank you. We thank each of the witnesses as well.

And let me say to any of you who are out there who are thinking about this issue, if you have got any suggestions about how we should handle this issue, please give us a call. We would like to work with you to ensure that we have thought through all of the consequences of adopting an ill-conceived auction policy.

We thank you all very, very much. We are going to stay in close contact with you in the weeks and months ahead. Thank you very much. We will now move on to our second panel:

Mr. Wayne Schelle, who is Chairman of American Personal Communications, representing PCS Action

Mr. Tom Wheeler, President of the Cellular Telecommunications Industry Association;

Mr. William deKay, Chairman of Dial Page Communications, representing Telocator;

And Mr. R. Craig Roos, President and CEO of Personal Communications Services of New York, a LOCATE company.

Mr. deKay, welcome. Again to each of you, you have 5 minutes to make your opening statement, and you will be given some opportunity to elaborate in the question and answer period. Whenever you are ready, sir, begin.

STATEMENTS OF WILLIAM D. deKAY, EXECUTIVE VICE PRESIDENT, DIAL PAGE; THOMAS E. WHEELER, PRESIDENT, CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION; CRAIG ROOS, CHIEF EXECUTIVE OFFICER, PERSONAL COMMUNICATIONS NETWORK SERVICES OF NEW YORK; AND WAYNE SCHELLE, CHAIRMAN, AMERICAN PERSONAL COMMUNICATIONS, ON BEHALF OF PCS ACTION

Mr. DEKAY. Good morning, Mr. Chairman. My name is Bill deKay and I am executive vice president of Dial Page,

headquartered in Greenville, South Carolina. Dial Page's operations cover six States in the Southeast and provide paging, specialized mobile radio service, and other radio-frequency-based telecommunications services to over 200,000 customers, ranging from large Government agencies to Fortune 500 companies to doctors, small businesses, and residential customers.

I appear before the subcommittee today on behalf of Telocator, the personal communication industry association. Telocator represents the full range of both new and existing wireless services such as radio common carrier and private carrier paging companies, cellular carriers, conventional mobile telephone companies, and entities involved in emerging personal communications services, or PCS. I presently serve as the association's chairman.

I appreciate the opportunity to appear before the subcommittee today to address the issues of options as a method of selecting licensees for radio spectrum. This will have a critical impact on the personal communications industry, on the incredible promise of future wireless services, and on the benefits which a diverse and highly competitive industry bring to the American economy.

To get right to the point, the seemingly inevitable decision to implement spectrum auctions will hurt American consumers and fail to deliver its promise of revenues for the Federal Government. Let me explain why. Paging and cellular companies serve a combined total of 24 million Americans today, and employ 55,000 people. It is estimated that new forms of personal communications service will reach 60 million more customers by the year 2002 and create jobs for a quarter of a million Americans.

The companies which make up my industry vary widely in size and the diversity of the services offered. What we all have in common is their dependence on a scarce national resource—radio spectrum—assigned for use by the FCC. The wireless marketplace was created and cultivated by individual entrepreneurial companies willing to bear risks. While there are certainly some very large companies involved in the personal communications industry today, many of these have grown from very modest beginnings with just a license won by a lottery, a fierce entrepreneurial spirit, and a willingness to invest whatever it took to make a dream of service a reality.

We think it is neither fair nor good public policy that medium and small carriers who built this industry and greatly influenced its development should have a diminished opportunity to obtain licenses for advanced technologies and future opportunities in wireless services. It is precisely this outcome which we fear will be the inevitable result of spectrum auctions. Spectrum auctions will create unfair preferences in the selection of licensees by favoring those with substantial net assets and large, particularly telecommunications-related businesses. These applicants can outbid other highly qualified innovators simply because their capital structure diminishes the risk factors which otherwise limit the bids of other responsible applicants.

Finding mechanisms to modify auction procedures in order to ensure that new and smaller providers have a fair chance, if such mechanisms can be crafted at all, will further delay the implementation of new services. Experience with spectrum auctions overseas

does not bear out the argument that the selection of licensees will occur more quickly using auctions than lotteries. Protracted legal challenges to the process and winning bidders will likely make this longer, not shorter.

Television and cellular options have taken 2 to 3 years in New Zealand and England to complete. The issue of delay is a serious one, not only for the industry, but for the economy. The demand estimate of 60 million customers for new services by 2002 cited earlier in my testimony is based on licensing these services in 1994. A delay of only 3 years would result in 14 million fewer subscribers by that time.

Fewer customers means proportionately fewer new jobs and new revenue for the American economy. As a result, the public loses. They lose because innovators promising new and untested services and small or start-up operators will have limited, if any, opportunity to obtain licenses. They lose because the high, up-front cost—start-up cost of auctions will reduce the taxable income of new PCS offerings and indeed threaten the economic viability of these new services.

For all of these reasons, we respectfully submit that spectrum auctions are an intellectually attractive idea that won't work as promised and will have substantial negative effects on the wireless industry and the economy in general.

Thank you for the opportunity to discuss this with you today.

Mr. MARKEY. Thank you, Mr. deKay. We will be back with some questions later.

[The prepared statement of Mr. deKay follows:]

Statement of

William D. deKay, Chairman
TELOCATOR, THE PERSONAL COMMUNICATIONS
INDUSTRY ASSOCIATION

to

Subcommittee on Telecommunications and Finance
Energy and Commerce Committee
U. S. House of Representatives

April 22, 1993

RE: Licensing Improvement Act of 1993

Mr. Chairman, my name is Bill deKay and I am Executive Vice President of Dial Page, headquartered in Greenville, South Carolina. Dial Page's operations cover six states in the southeast and provide paging, Specialized Mobile Radio Service and other, radio frequency-based telecommunications services to customers ranging from large government agencies and Fortune 500 companies to doctors, small businesses and residential customers.

I appear before the Subcommittee today on behalf of Telocator, the Personal Communications Industry Association. Telocator represents the full range of participants in both new and existing wireless services. Its membership includes, radio common carrier and private carrier paging companies, cellular carriers, conventional mobile telephone companies and entities involved in emerging personal communications services (or "PCS"). Currently, the association has over 450 members representing 1200 companies. I presently serve as the association's chairman.

I appreciate the opportunity to appear before the Subcommittee today to address the issue of competitive bidding --- or auctions --- as a method of selecting licensees for radio spectrum. This issue will have a negative impact on the personal communications industry as it exists today, on the incredible promise of future, wireless services, and on the benefits which a diverse and highly competitive personal communications services industry can bring to the American economy.

Paging and cellular companies serve a combined total of 24 million Americans today and employ more than 55,000 people. Their customer bases grew by 25% and 32%, respectively, during 1992, and are projected to continue to grow at dramatic rates. In addition, it is estimated that new forms of personal communications service will reach 60 million more customers by the year 2002, and create new jobs for a quarter of a million Americans.

The companies which make up my industry vary widely in size and the diversity of services offered. They exist in big cities and in rural areas. They offer highly specialized services to particular industries or professions and mass market services to individual consumers on a retail basis.

What all these companies have in common is their dependence on a national resource: radio spectrum, assigned for their use by the Federal Communications Commission. Assignment of spectrum for a particular services is based upon a determination by the Commission that such an assignment serves the public interest, convenience and necessity.

The wireless market place was created and cultivated by individual, entrepreneurial companies who were willing to bear the risk and finance the development and deployment of

radio spectrum based services. While there are certainly some very large companies involved in the personal communications industry today, many of these have grown from very modest beginnings. The largest companies operating in cellular and paging today, for example, are less than ten years old. They were started by a small group of fierce entrepreneurial individuals who were willing to invest whatever it took to make a dreamed of service a reality for the American public.

While not all of us in the personal communications business can boast of quite that same degree of success, our industry has achieved much because of the diverse talents of the large, medium and small carriers who founded and built it. We believe that the personal communications industry has utilized the spectrum resources responsibly and returned to the American economy many benefits in the form of jobs, tax revenues and investment. We are proud of our contribution to American competitiveness and our personal investment in a wireless telecommunications infrastructure which is increasingly vital to American industry, education, security and, indeed, every facet of American life.

We think that it is neither equitable nor good public policy that the medium and small carriers who built this industry and have been an important influence in shaping its development should have diminished opportunities to obtain licenses for advanced technologies and future opportunities in wireless services. It is precisely this outcome which we fear will inevitably result from spectrum auctions.

Spectrum auctions will create unfair preferences in the selection of licensees by favoring applicants who have substantial net current assets and large established — particularly telecommunications related — businesses. These applicants will outbid other highly qualified

innovators simply because their capital structure and existing businesses diminish the risk factors which will limit the bids of other responsible applicants.

Finding mechanisms to modify auction procedures in order to ensure that new and smaller providers have a fair chance, if such mechanism can be crafted at all, will further delay the implementation of new services. Moreover, any such mechanisms will fatally distort the free market forces which are at the heart of the auction concept.

As a result, with spectrum auctions, the public loses. They lose because innovators proposing new and untested services and small or start-up operators will have limited, if any, opportunity to obtain new licenses. The development of efficient geographic and ownership structures, the selection of the most advantageous technologies and deployment plans, development of the most publicly beneficial services, and the identification of the most efficient managers of new wireless technologies can best be achieved if lottery selection procedures which are already in place are strengthened and improved. Such improved lotteries will preserve realistic opportunities for numerous and diverse innovators in each market.

Such lottery processes have been the subject of serious abuses in the past, and the personal communications industry itself has suffered directly from such abuses. When spectrum licenses end up in the hands of insincere applicants, an opportunity is stolen from an entity which intends to build systems and offer services to the public.

Such abuses can be attacked and reduced, however, without jettisoning the benefits such an assignment policy brings: the fact that it preserves realistic opportunities for diverse innovators, particularly small businesses, to compete for a place in the industry.

In its filings in various proceedings at the FCC, including the current PCS dockets, Telocator has advocated stringent anti-speculation safeguards to strengthen lottery procedures by employing strong, front end qualifiers to deter insincere applicants for radio frequency authorizations. Specifically, Telocator has recommended the following:

Financial Qualification Criteria: Requiring firm financial commitments at the initial application stage or the posting of a construction bond immediately upon winning the lottery, is critical to assuring that applicants are in a position to achieve the actual deployment of proposed systems.

High Application Fees: In order to reduce potential speculative gain, Telocator believes the FCC should adopt the highest non-refundable legally defensible filing fees.

Prohibition on Pre-lottery Settlements: No publicly beneficial or legitimate business purpose is served by allowing pre-lottery settlements licensing lotteries.

The Federal Communications Commission has already allocated spectrum near 2 GHz for broadband Personal Communications Services, which include a wide range of mobile voice and data services. Proceedings to establish the appropriate regulations and proceed to licensing of these new services are at an advanced stage. (The public comment cycle for the Commission's proposed rules ended January 8, 1993.) These services are the object of the auctioning proposals now being debated in the Congress. Some proponents contend that the selection of licensees will occur much more quickly using auctions than with lotteries.

Experience with spectrum auctions overseas does not bear out that argument. Protracted legal challenges to the auction process generally and the winning bidders specifically will likely make the process longer, not shorter. In New Zealand, for example, the conduct of auctions for cellular and television took more than two years to complete. In England, the auctioning of television licenses took more than three years.

Moreover, even if the Congress were to grant the Commission auction authority promptly, rules and conditions for the actual conduct of auctions would have to be put into place. This would require the initiation, conduct and conclusion of a whole new rulemaking proceeding on auctions, before any licensing processes could actually be started. Such a proceeding, under the best of circumstances, typically takes a year or more to conduct.

This issue of potential delay in the licensing is a serious one, not only for the industry but for the economy as well. The demand estimate of 60 million subscribers for new personal communications services by 2002, cited earlier in my testimony, is based on an assumption that licensing of these services occurs in 1994. That same study estimated that a delay of only three years would result in 14 million fewer new subscribers for the new services in 2002. Fewer subscribers means proportionately fewer new jobs and less new revenues for the American economy.

I realize that revenues for the Federal Government is a major reason that auctions are being considered. It is the view of many analysts, however, that the revenue potentials from auctions which have fueled this debate are grossly overstated and likely will not materialize.

You also have to balance the revenue to be received from auctions against the significant negative costs to the economy which will result from the delay in introduction of new services. These negative impacts include reduced employment and loss of improvement in productivity. Large auction payments as a start-up cost of doing business will also impact the profitability of PCS offerings. Reduced profitability means reductions in taxes paid by PCS operators. In short, auctions will not improve the economy - they will only provide a one time infusion of revenues at the cost of recurring, long term tax revenues from profitable PCS operators.

Finally, industry costs from auctions must ultimately be recovered from customers of new services. This increase in consumer costs (and the potential that this cost will make new offerings competitively inviable) must be balanced against the benefit of auction revenues.

Again, the experience with spectrum auctions overseas are instructive. In England, the bidding for television spectrum drove up valuations to unrealistic levels, well beyond the true market potential for the licensee's proposed operations. The up front cost of buying the license siphoned off a substantial amount of money which otherwise would have been available to finance system build out. Such an occurrence not only threatens the viability of the new service, but has a negative impact on the quality of the services ultimately offered.

More fundamentally, auctions threaten the "public interest" basis upon which spectrum assignment decisions are supposed to be made. The current, fiscal environment will unavoidably create an incentive to allocate spectrum to services with high commercial value, not for necessary uses (such as public safety and emergency response facilities) which better serve the public interest but do not offer the same revenue potential.

For all these reasons, we respectfully submit that spectrum auctions are an intellectually attractive idea that won't work as promised and will have substantial negative affects upon the wireless communications industry, the public we serve and the economy in general.

Mr. MARKEY. Mr. Wheeler, welcome back. Whenever you are ready, please begin.

STATEMENT OF THOMAS E. WHEELER

Mr. WHEELER. Thank you, Mr. Chairman. The issue that we are talking about today is really the intersection of the revenue needs of the public and the desire of entrepreneurs, large and small, to grow services into the 21st century, and inevitably that becomes intertwined in commercial interests.

We would—obviously, representing the cellular industry, we would prefer not to pay. But the reality is that most cellular operators have already paid for their spectrum today. But that payment was made to a private entity, not to the public.

As an example to give some scope to this, some magnitude, the Washington Post Company sold four cellular licenses that it had won and reported a net after-tax gain of \$165 million. Somebody was benefiting. It wasn't the public.

Having already participated in an auction, therefore, that didn't benefit taxpayers, then we certainly can support an auction which does benefit taxpayers. But this requires more than a mandate from the Congress to just go forward and do auctions. It requires also some guidelines.

The Congress has previously established fairness rules when it came to spinning off Conrail and you said there should be an auction, not just one negotiation with oil, timber and mineral rights, and where you have said that boundaries should be small areas because that encourages more and more smaller people to participate. The recent RTC decision in response to congressional concern to pull the S&L assets that they were auctioning off into smaller groups so that small businessmen could participate. That kind of guidance I think is necessary from the Congress to the Commission in this activity.

Really, what we are looking at here is the last lap of President Clinton's information highway. PCS is broad-band, high-speed, digital information. We spend a lot of time, and you spend a lot of time in this committee focusing on building a national optical fiber infrastructure that is going to race broad-band data across the country only to have it hit the wall when it comes to the question of how do you move from the end of the fiber to a place where there is no fiber where the information can best be put to use; i.e., on the site where the information is required.

What we are seeing is that communications, whether it be the entrepreneurs that you have had up here before on the previous panel or whether it be cable companies who want to grow out of broad-band fiber into broad-band wireless or MCI that wants to grow out of a broad-band national network into broad-band local wireless or cellular companies who want to grow out of narrow-band wireless into broad-band wireless, all are seeking to grow into this operation and will obviously be affected by the auction process.

What kind of guidance should you provide to the Commission when you authorize auctions? I think Mr. Oxley in his legislation has begun to provide and to pinpoint some of that, but let me focus on four in specific. First of all, you clearly need to maximize competition. We agree with the Illinois Commerce Commission, with

the New York Department of Public Service, the Pennsylvania PUC, the National Association of Regulatory Utility Commissioners, the Small Business Administration, and FCC analysts who concluded that cellular eligibility and multiple licenses will enhance competition in the new PCS.

Secondly, we think you need to worry about maximizing the value to the taxpayers. Clearly, selling an asset five times over is going to net more than selling it once or twice. The Congressional Budget Office has estimated for you that the PCS auctions will generate about \$9.60 per pop—per unit of population in an area. Frankly, we think that is probably low. Our experience has been higher.

Mr. Schelle sold some of his cellular properties, as is his right, as he should, for \$16, \$18, \$20 a pop—almost double what CBO is. I think that that kind of valuation is something that needs to be taken into consideration. How do you encourage those kinds of numbers? In Hong Kong recently, the fifth cellular provider—fifth cellular provider with less than six megahertz of spectrum is now valued at \$50 a pop. So I think probably the CBO's numbers are light and that there is more opportunity there for the taxpayer.

Thirdly, the recommendations—we need to encourage small and minority business. The Small Business Administration recommended to the FCC that license size for PCS determines who can participate, and they said there ought to be 5 licenses, 20 megahertz using cellular license areas.

And finally, the fourth point is that there is a Government-imposed uncertainty which devalues the value of spectrum, and that comes from State regulatory and State taxation.

I would submit one thing in conclusion, Mr. Chairman, and that is that there is a model which has been built for us to learn from, and that is what happened in Great Britain, in the United Kingdom. Because there they licensed large geographic areas, big chunks of spectrum to only a handful of people: national license, 50 megahertz, three players. What has happened there has been that only the big boys have been able to play. That of the 50 megahertz allocated to each licensee at the most 10 megahertz is being used and the other 40 is being held back, and I am responsive to your comment at the beginning that you don't want to have it locked up in a vault someplace. You want to have it out there for innovation. And the rural areas have been ignored.

We would urge you to when you enact spectrum legislation tell the FCC not to repeat the UK model and to encourage competition, to maximize revenue for the taxpayer, and to encourage small business.

Thank you.

Mr. MARKEY. Thank you, Mr. Wheeler, very much.

[The prepared statement of Mr. Wheeler follows:]

STATEMENT OF
THOMAS E. WHEELER, PRESIDENT & CEO
CELLULAR TELECOMMUNICATIONS INDUSTRY ASSOCIATION

Mr. Chairman:

My name is Thomas Wheeler, and I am the President and CEO of the Cellular Telecommunications Industry Association, the trade association of the nation's cellular telephone companies, building tomorrow's wireless future.

You are about important work here, changing the way radio spectrum is allocated. Auctions of spectrum to the highest bidder -- guided by appropriate ground rules and principles -- will assure consumers that they get new services competitively and quickly, and that taxpayers will get full value for this scarce public resource.

We're sure Congress does not want to micro-manage the FCC's licensing of spectrum. But changing the way radio spectrum is allocated is a critically important issue, and must be guided by appropriate ground rules and principles. We would like to suggest some simple principles, which, if Congress asserts them, will bring customers innovative services rapidly and at reasonable prices, while obtaining the full value for the spectrum.

Congress Has Created Fairness Rules in the Past

There is ample precedent for the ground rules and principles that I will outline. Congress established a set of fairness rules for the distribution of U.S. government assets when it authorized the sale of the government's Conrail freight railroad. The committee insisted on a public offering -- an auction -- with many bidders instead of a negotiated sale to just one buyer, in order to maximize revenue to the taxpayer.

Likewise, Congress established rules in the public interest for leasing oil, timber and mineral rights on public lands and on the offshore continental shelf. The government is required to set a minimum bid, and the boundaries of the tracts to be released are small, so many companies are economically able to participate. These rules make sure that taxpayers benefit from the sale of these leases.

The cellular telecommunications industry, which began less than 10 years ago, was licensed without any payments to the government for the spectrum used. Some cellular pioneers received their licenses through a lottery process, which took seven long years, and others paid very large sums of money to some of the lottery winners to obtain spectrum, in what can best be described as a private auction.

Both lottery winners and those who purchased cellular spectrum risked great amounts of capital, hoping there would be demand for their wireless services. That demand has exceeded the experts' wildest projections. So far, cellular subscriber growth has passed 11 million users, with 9,500 more being added each day. More than \$11 billion has been invested in equipment, and more than 100,000 employees have been hired by cellular carriers and support companies.

Although cellular carriers would prefer not to pay for additional spectrum, the industry

recognizes that our country is burdened by a huge budget deficit, which can retard business growth in the future. America's businesses must play a role in increasing government revenue in order to reduce the deficit. Therefore, the cellular industry is supporting the new policy of auctioning new spectrum with fairness guidelines.

A Fair, Equitable Distribution of Spectrum

The new spectrum auction policy would apply most immediately to the licensing of personal communications services (PCS) at 1.8 GHz to 2 GHz -- the next major spectrum block to be licensed by the Federal Communications Commission (FCC).

Auction rules for PCS should be based on obtaining fair market value from this valuable public resource. The way to ensure that does not happen is to adopt a licensing policy that includes large spectrum blocks -- such as 40 MHz -- across large geographic areas -- such as regional or national licenses -- and excludes the current wireless innovators.

For PCS -- and all spectrum auctions -- these are the guidelines that should prevail:

- ◆ Maximize Competition -- The new spectrum should be available for both existing telecommunications companies expansion as well as for small and minority entrepreneurs. License areas and spectrum blocks should be small enough to incent small business participation and assure the maximum number of competitors.
- ◆ Maximize value to the taxpayers -- Just as more service providers assure a competitive retail market, more bidders make the wholesale market for the spectrum derive a fair value. Frankly, we think the budget estimates are low when one looks at what cellular companies have had to pay for their spectrum.
- ◆ Encourage small and minority businesses -- How the new spectrum is allocated will determine whether only deep pocket players can participate. The Small Business Administration has urged the FCC to allocate five licenses of 20 MHz in each of the existing 734 cellular license areas as a way of assuring opportunities for small business. We agree. In addition, we urge you to permit spectrum payments to be made on the installment plan out of revenues. Since the price of the spectrum will not be inconsequential, it should be handled just like we individually handle the purchase of a home or automobile -- paid off over time.
- ◆ Avoid uncertainty -- Ensure the highest bids for new spectrum and continued investment in existing services by blocking regulatory and tax uncertainties at the federal and state level.

The cellular industry supports auctions, conducted under these principles, for personal communications spectrum. We believe that in establishing this process Congress must establish

a set of guidelines to ensure that this public asset is distributed in a fair and equitable manner, and in the best interest of its true owners--the American people.

Additionally, to keep some winning spectrum bidders from gaining an unfair advantage over others, the rules should require that all licenses in a given service area be auctioned at the same time, and that all winners start building their systems at the same time.

Open Bidding Maximizes Competition, Revenues

By maximizing the number of entrants in the competitive bidding process, Congress can optimize the return to the U.S. Treasury, thereby reducing the federal deficit. The Congressional Budget Office (CBO) projects to receive \$7.2 billion over the next several years from the auctioning of PCS spectrum. However, we believe this estimate from the CBO is too low.

By limiting PCS providers to two or three companies -- perhaps with nationwide licenses -- and excluding cellular carriers and other companies that are likely to bid, the government will potentially deprive taxpayers of billions of dollars.

The public will also benefit from a no-exclusion policy because incumbent wireless service providers -- paging, specialized mobile radio (SMR), cellular carriers, local exchange carriers, interexchange carriers -- will bring their communications expertise to PCS. And new services can be integrated with existing services, bringing about economies of scale. The resulting innovation will provide the public with more low-cost choices.

As Dr. Alan Pearce said in a recent report on the troubled British personal communications licensing process: "The policymakers in Britain failed, because they attempted to create more telecommunications networks to compete with existing telecommunications networks, instead of permitting the marketplace to determine what types of services are being demanded by the public."

Three nationwide PCN licenses, of 50 MHz each, were granted in the United Kingdom. Only two are still in business, providing limited service in urban areas and using only 10 MHz each.

The noted communications industry analyst Dr. Leland Johnson has observed that in markets awaiting definition and demand signals from consumers, casting a wide net helps ensure that numerous entities will have an opportunity to enter the market through successful bids. These entities will bring with them various approaches and expertise, which will help form the new services.

Johnson adds: "No one knows for sure how the advantages and disadvantages posed by the various players would work out in the marketplace. The best way to find out is for the FCC to offer all parties the opportunity for market entry, and to have in place a sufficient number of

spectrum assignments to ensure subsequent vigorous competition among winning bidders."

Regulatory Parity Will Fuel Auction Revenues

To ensure the highest bids for new spectrum, as well as continued investment in existing services, U.S. policymakers should refrain from imposing regulatory and tax uncertainties at the state and federal level. Disparate regulatory treatment artificially distorts the marketplace to the disadvantage of both the service providers and consumers. Providers of similar communications services currently face different rules based on the blurring classification between common or private carrier.

This disparate treatment will be exacerbated as new spectrum is allocated through the auction process. A rising tide of state regulatory proposals will have a chilling effect on both future investment in current services such as cellular and on the government's ability to maximize bids for new spectrum. Likewise, the threat of non-federal taxation of the presumed asset value of a federal spectrum license will serve to decrease the value of that license to bidders and therefore to the U.S. Treasury.

Common carrier regulation, which now covers cellular, subjects a company to both state and federal tariffing regulation, while private regulation allows a carrier to tailor services to specific entities. The cellular industry expects to compete with private carriers, such as NexTel (formerly Fleet Call), and PCS providers. State regulation may cause an uneven playing field between these services and cellular.

Small-, Mid-Sized Companies Should Be Included

A fair and equitable spectrum auction should include widespread participation by smaller companies and entrepreneurs, including minority-owned companies. Their inability to participate would create serious distortions in the communications marketplace and in services to the public. These companies traditionally develop services tailored to the particular needs of their area and frequently will ensure the rapid deployment of services to rural parts of the country. Small- and medium-size companies create new and innovative ways of using spectrum to meet consumer needs.

Under an auction plan, smaller bidders face acute difficulties in competing for spectrum: availability of financing; size of service area; and size of spectrum block being auctioned. Policymakers should identify and lower the barriers that keep these companies from being able to compete.

Possibly the biggest of these obstacles is access to capital. Awarding licenses to the highest bidders will serve the treasury and will favor larger, financially-strong companies, but it will not allow smaller bidders to participate if up-front financing is required. The government should establish simple "loan" mechanisms for some portion of the auction price to ensure that qualified small and mid-size companies can participate in the auction process, perhaps by

spreading out payment of the spectrum fee over time.

Smaller geographical license areas and smaller spectrum blocks will ensure that small businesses, minority-owned businesses and rural operators will have a chance to bid for spectrum and obtain financing. Consumers will benefit if the PCS spectrum auction is not reserved exclusively for a few giants of the communications business.

Streamline the Regulatory Process

U.S. businesses, large and small, are intensely interested in providing personal communications equipment as well as services. For these companies to stay competitive with the world's wireless communications industry, the United States must move forward with a fast, efficient regulatory process.

Unnecessary regulatory proceedings, such as creating a new service-area grid, should be avoided. Ignoring the existing cellular license areas and drawing a whole new set of boundaries would plunge the proceeding into a bureaucratic morass.

By auctioning PCS licenses in the same 734 market areas now served by cellular, Congress will speed up the arrival of new wireless services by years. It took nearly a decade for the FCC to draw the boundaries for these market areas. Let's not waste more years waiting for the FCC to draw a new set of boundaries. The cellular industry's grid of metropolitan and rural service areas is a proven licensing method, having brought wireless communications to millions of Americans. Using these cellular geographic service areas will guarantee the deployment of market-specific personal communications services on a nationwide basis.

Moving Into the PCS Future

Auctioning PCS spectrum will open the door to a new generation of wireless services, such as indoor wireless communications, wireless computers, wireless facsimile machines, graphics transmission and, maybe, a wireless video shopping service! Futuristic personal digital assistants will combine a cellular phone, a computer, electronic mail and access to databases. The possibilities are exciting.

PCS is often mischaracterized as being like cellular, only smaller and lighter. The potential of PCS is much bigger than that. We have to avoid the trap of defining tomorrow in terms of what we understand today.

While new wireless networks will certainly be capable of providing voice, the real importance to our nation and our economy is harnessing their broadband capability to transmit massive amounts of information. Today, cellular is the wireless equivalent of the wireline's copper wire. As the wireline world replaces copper wire with fiber-optic cable, the wireless world must replace its narrowband-based capability with broadband capability.

The next generation of wireless communications -- which will be broadband, high-speed and digital -- will be the last lap of President Clinton's fiber-optic information highway.

This family of wireless communications services should be limited only by the imagination of the innovators and the needs of the consumers -- not by government's policies.

PCS, of course, is only one of the new services seeking a spectrum allocation from the FCC. The points we have made relative to PCS auctions have merit with all the services the FCC administers. Your decisions on spectrum auctions will apply to all those allocations, into the future, into the 21st century.

What a heavy responsibility you have! What an important moment this is in the history of telecommunications.

We leave you with the suggestion that the auction rules you establish should be guided by two overriding principles:

- ◆ They should bring innovative services to the public quickly and at reasonable prices.
- ◆ They should bring the government full value for the spectrum.

Mr. MARKEY. Mr. Roos, let's go to you next.

STATEMENT OF R. CRAIG ROOS

Mr. ROOS. Good morning. Mr. Chairman and members of the subcommittee, my name is Craig Roos. I am president and chief executive officer of PCNS-New York and also its parent company, LOCATE. I appreciate the opportunity to testify this morning.

I believe what we determine today could determine the fate of small businesses in the telecommunications industry. The issue we face is simply how to implement a valuation policy for spectrum without destroying service policy goals for fair and reasonably priced new services and without destroying innovative ideas that entrepreneurs so often bring to a table.

The basic question we have to answer here is why should merit be irrelevant to the award of a spectrum license? Should there not be a direct connection between innovation and spectrum licensing? And should we not continue to encourage the development of such technologies for the benefit of all Americans.

If Congress authorizes the FCC to award radio frequency licenses only by competitive bidding, we at LOCATE fear that the small innovative telecommunications companies will become part of the Nation's history rather than their future. As an alternative to competitive bidding and to preserve business relationships in the telecommunications industry created by small businesses, we submit the following recommendations.

First, that the FCC should not be authorized to use competitive bidding as the exclusive means for awarding spectrum. Rather the FCC should be required to award at least one of those licenses in each market through a process of expedited comparative hearings or preferences that are based on merit alone.

Second, and most important, to facilitate the participation of small companies in new services, the FCC should be required to award at least one license in each market, through either the preference or expedited comparative hearing process, to a small company that qualifies as a small radio-telephone communications company as defined by the Small Business Administration. This would allow companies with up to 1,500 employees each to participate in this process.

Incrementally and as a condition of such preference or set-aside, credit should be given in the process to companies who have pioneered efforts in the services. Since the process now has been underway for more than 3 years, there is substantial documentation already on file at the FCC of many, many applicants involved in this process that can substantiate established Pioneer's Preferences, progress reports and other experimental reports.

Third, if competitive bidding is used for all licensing, which we recommend against, including the licenses of small companies, the amount spent in conducting experiments and research and development activities should be multiplied and credited towards the bid price so as to try and create an equal playing field for all.

Fourth, as an alternative to a one-time inclusive bid price, we would recommend that the licensees, particularly the small businesses, be able to pay the fees on an annual basis based on operational revenues derived out of each license.

LOCATE is a small entrepreneurial company that has provided high quality competitive telecommunications services via state-of-the-art microwave, particularly in the New York City area, for more than 10 years. As an active participant in this industry for 10 years, we have led the way in developing spectrum efficient radio technologies and innovative services. For the past 3 years, our subsidiary, PCNS of New York, has dedicated significant efforts to research and development of PCS. Our innovative efforts include not only the development and implementation of successful spectrum solutions for voluntarily migrating existing two gigahertz users to higher frequencies, and thus freeing the spectrum for PCS. We are the first and only company to successfully negotiate on a large scale removal of the two gigahertz users from that bandwidth. As a result of our efforts, many of these players, particularly in the New York Metropolitan Area, have agreed to move off of that spectrum.

In total, our company has spent more than 30 percent of its entire net worth in experiments of PCS in the last 3 years. This is a very significant investment for a small entrepreneurial company. If Congress authorizes the FCC to only use competitive bidding as the process for awarding spectrum for new services, LOCATE and other companies like them will quickly disappear from being innovative at all.

Reward for innovation was the rationale behind the Pioneer's Preference rules that have been applied to PCS. We would recommend a similar but broader standard should be applied in all spectrum licensing to recognize innovation in both new technologies and services. Recognition should be given to companies particularly that engage in experiment and early service development.

Answering some of the questions that were asked earlier on the panel, we would specifically recommend that the Pioneer's Preference concept be expanded to recognize more small, radio-type telephone companies. The Pioneer's Preference concept should also clearly recognize the development of innovation of not just technical but also service concepts such as migration that lead to the more rapid introduction of those services. This is something that was not done in the Pioneer's Preference rules to date.

While on the face of it competitive bidding processes appear to be competitive in nature, the adoption of such measures in fact would reverse the trend towards full competition that this Congress, this committee, the FCC and the courts have worked so hard for many years to reverse.

A reduction in competition could easily result from the adoption of fully competitive bidding processes which would eliminate the checks and balances inherent in the market system that have lowered prices and made competition and services more available to people as a whole.

As a small competitor in microwave-based communications, we have fought long and hard against the local exchange carriers in our industry to put a place for the customers for diversity. In fact, in 1993 a T-1 in New York and other areas now cost less than 30 percent of what it did before competition entered the marketplace. This is done also with a recognition of quality offerings, particularly in the case of LOCATE, where existing customers, including

major medical institutions and others, have already begun to request PCS services directly from LOCATE. This is not going to be possible without a license.

Mr. MARKEY. Mr. Roos, could you summarize, please?

Mr. ROOS. Sure. As a business executive who has had to balance company budgets, I appreciate the administration's request for ways to increase Federal revenue. While competitive bidding proposals for licensing spectrum has an appeal for revenue raising, the better long-term solutions that can maximize revenue for the Federal Government are through other measures which will be accomplished without sacrificing the public interest.

Mr. MARKEY. Thank you, Mr. Roos, very much.

[Testimony resumes on p. 138.]

[The prepared statement of Mr. Roos follows:]

TESTIMONY OF R. CRAIG ROOS
CHIEF EXECUTIVE OFFICER
PERSONAL COMMUNICATIONS NETWORK SERVICES OF NEW YORK, INC.,
A LOCATE COMPANY

Good morning Chairman Markey and members of the Subcommittee. My name is Craig Roos. I am the President of Personal Communications Network Services of New York, Inc. ("PCNS-NY") and its parent company, LOCATE, Inc. I appreciate the opportunity to testify before the Subcommittee on an issue that I believe could determine the fate of small business in the telecommunications industry. The issue we face is how to implement a value policy for spectrum without destroying service policy goals for reasonably priced new services and without destroying innovative efforts of entrepreneurs. Why should merit be irrelevant to the award of spectrum licenses? Shouldn't there be a direct connection between innovation and spectrum licensing to encourage the continued development of new technologies by U.S. manufacturers and service providers?

If Congress authorizes the FCC to award radio frequency spectrum licenses by competitive bidding, I fear that small, innovative telecommunications companies will become a part of this Nation's history rather than a part of its future. I urge the Subcommittee to analyze the long term effects of competitive bidding on the public interest and telecommunications consumers and not to become mesmerized with possible short term one-time revenue gains. I strongly oppose the authorization of competitive bidding as a broad licensing procedure for awarding our Nation's scarce spectrum resources.

As an alternative to competitive bidding and to preserve business opportunities in the telecommunications industry created by small business, I submit the following recommendations for the Subcommittee's consideration:

- (1) The FCC should not be authorized to use competitive bidding as the exclusive means of awarding radio frequency licenses. The FCC should be required to award at least one license in each market through an expedited comparative hearing based on merit.
- (2) To facilitate the participation of small companies in new services, the FCC should be required to award at least one license in each market through an expedited comparative hearing to a small company that qualifies as a small radiotelephone communications company as defined by the Small Business Administration's regulations^{1/} and has a demonstrated presence in a locality.
- (3) If competitive bidding is used for all licensing, including licensing of small companies, amounts spent in conducting experiments and research and development activities should be multiplied and credited towards the bid price.
- (4) As an alternative to a one-time all inclusive bid price, the Federal Government could be compensated for spectrum by requiring radio frequency licensees to pay an annual fee to the Federal Government based on the operational revenues of each licensee.
- (5) If the Government wants to experiment with competitive bidding, competitive bidding should be limited to spectrum reallocated from Government to commercial use and should not be applied to commercial spectrum reallocated for new use including spectrum reallocated for PCS.

LOCATE is a small, entrepreneurial company that provides high-quality competitive telecommunications services via its state-of-the-art digital microwave network in the New York City and other major metropolitan areas. As an active participant in

^{1/} Radio Telecommunications Companies are considered "small" by the Small Business Administration if they have 1,500 employees or less. 13 C.F.R. § 121.601, Major Group 48 (1992).

the telecommunications industry since 1981, LOCATE has continuously pushed the edge of technology in developing spectrum-efficient radio technologies and innovative services. For the past three years LOCATE, through its subsidiary PCNS-NY, has dedicated significant efforts and resources to the development of PCS. PCNS-NY's innovative efforts include the development and implementation of successful spectrum solutions for voluntarily migrating existing 2 GHz users to higher frequencies and liberating spectrum for PCS. PCNS-NY is the first and only company to negotiate successfully with several major users of the 2 GHz band throughout the United States. As a result of PCNS-NY's individual efforts, these users voluntarily have agreed to relocate their facilities to higher spectrum. PCNS-NY also has conducted extensive testing with PCS technologies and service applications. In total, PCNS-NY has spent over three million dollars in experimentation with PCS. This is a significant investment for a small, entrepreneurial company. If Congress authorizes the FCC to use competitive bidding as the process for awarding spectrum for PCS and other new services, PCNS-NY and other small companies effectively will be precluded from any meaningful opportunity to participate in these new services.

The competitive bidding unfairly and harshly penalizes smaller, innovative companies involved directly in extending the boundaries of technology to develop new services to meet increasingly sophisticated telecommunications needs. A

competitive bidding process has the direct potential to exclude companies, such as PCNS-NY and LOCATE, that have already committed a significant amount of their resources to the exploration of new technologies, from ever becoming a licensee for the services they are helping to create. As the pace to technological advancement accelerates and the complexity of new technologies increases, the United States must adopt licensing procedures that actively encourage research into and development of new technologies and new service offerings. Small companies undertake a comparatively greater risk than large companies when they invest their monetary resources in the development of and experimentation with new technologies. The more limited financial resources of small companies provide less of a cushion to absorb research costs. In recognition of the value of innovation and development, if competitive bidding is authorized the costs incurred in experimentation and research and development should be credited by multiples towards the competitive bidding price. Documentation in the form of experimental progress reports and other experimental records should be required to substantiate the amount of the request.

Reward for innovation was the rationale behind the FCC's pioneer's preference rules recently applied to PCS. A similar but broader standard should be applied in all spectrum licensing to recognize innovation in both new technologies and new service offerings. Recognition should also be given to companies that engage in experimentation and early service development.

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As a small competitive microwave-based telecommunications company, we have fought long and hard to compete with the Goliaths in the telecommunications industry. By offering high-quality, reliable services, we have succeeded in injecting competition into the local loop. For example, in New York T-1 service cost approximately \$1,200 a month in 1988. In 1993, as a direct result of competition, the price of comparable T-1 service is now approximately \$415 a month.

Our success and competition would not have been possible, however, if we had been forced to bid for the radio frequency spectrum used by our microwave facilities. Competitive bidding as a licensing process will exclude small companies, frustrate competition in new telecommunications services and award spectrum licenses without regard to the technical qualifications or the merit of the applicant. In addition, by requiring licensees of new services to "purchase" their spectrum, new service providers will be at a competitive disadvantage with other existing services. This competitive disadvantage will be significant for services such as PCS that will compete with cellular companies not subject to competitive bidding.

The companies disproportionately excluded by this process would inevitably be small or mid-sized companies, recently established companies and entrepreneurial firms who may possess the necessary technical merit, skill and innovation to construct and operate the services but who lack the financial might required to "buy" the frequencies. Proposals by the FCC in the

PCS rulemaking and NTIA to permit licensees to make spectrum payments in two or three annual payments will not remove the obstacles that competitive bidding poses for small business participation. In many markets, the winning spectrum price will saddle a small business with an unacceptable debt burden. While the small business truly may value the spectrum at this price, the additional costs associated with starting a new service, such as network construction and administrative costs, may render the combined financial obligation in the first three years prohibitive and increase the price of new services beyond the reach of the majority of U.S. consumers. In addition, small companies seeking new capital and new investors will be unable to obtain the funds necessary to bid for spectrum if their technical merit and qualifications are irrelevant in the licensing process.

While on its face the competitive bidding process appears to be competitive, adoption of such measures, in fact, would reverse the trend toward full competition in the telecommunications industry -- competition which this Congress, the FCC and the Courts have worked so hard to foster in recent years. The concrete benefits to the American people of the competitive policies are evident from an analysis of the telecommunications market today. The entry of competitive service providers like LOCATE has lowered the price of advanced telecommunications services and simultaneously increased the quality and range of service available to the people of the United States. LOCATE's existing customers, including major medical care institutions,

already have begun to request PCS as a new service from LOCATE. The foreclosure of smaller competitive service providers from the licensing process through the use of competitive bidding could threaten competition in the telecommunications industry as a whole. By denying smaller, competitive companies the ability to obtain new spectrum their ability to survive in the market will be threatened. Indeed, many smaller companies may be forced out of the telecommunication industry entirely. This drastic reduction in competition, which could easily result from the adoption of the competitive bidding process, will eliminate the checks and balances inherent in the market system that have lowered service prices and enhanced service quality in telecommunications services.

In addition to its detrimental effect on small business participation in new services, competitive bidding raises several broad public policy concerns. First, the competitive bidding process does not contain any protections to ensure that the highest bidder who "wins" the purchased frequencies will use those frequencies efficiently or, for that matter, that the frequencies will be used at all. Indeed, competitive bidding creates a real danger that companies will participate in the bidding primarily to remove the frequencies from the market either to protect their existing services from competition or to reserve the frequencies for a future unidentified use. If this is permitted, the U.S. consumer will lose and the dominance of a single or few telecommunications providers will return and offer

too little services at too high a price. Accordingly, we recommend that existing cellular carriers that have current ownership of 20% or more of the points of presence in a particular market be ineligible to participate in competitive bidding.

At a minimum, as a condition of their licenses, licensees of radio spectrum should be required to reach certain operational milestones towards the commencement of service within pre-designated time limits in order to prevent companies from "hoarding" frequencies and to ensure their efficient use. The forfeiture of the license that would result from failing to meet the established operational milestones would create a strong incentive for expedient use of the reallocated spectrum and promote rapid introduction of new advanced telecommunications services to the people of the United States and U.S. business. Further, under this proposal, if the reallocated spectrum is not utilized it would not remain stagnant but rather would be promptly made available from reallocation.

Second, the competitive bidding process will erode the FCC's substantive oversight of the licensing process. Contrary to the intent of the Communications Act, the spectrum auction process gives the FCC little opportunity to fulfill its public interest mandate to determine the best use of this Nation's radio frequency spectrum. The FCC's role will be reduced, in essence, to that of an auctioneer -- void of any substantive evaluation of the relative merits of the competing applicants. A closer

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examination of the qualifications of an applicant to provide the new services is particularly important in licensing services that use new technologies since, for many of these technologies, the necessary qualifications for prospective licensees have not yet been established.

The licensing process, more than any other process managed by the FCC, is intertwined with and inseparable from the public interest. Spectrum must be held as a public trust and regulated. Competitive bidding subverts the public trust and penalizes small business and their contributions to the growth and stability of the United States economy.

It is my firm belief that the public interest is best served by a licensing procedure that requires a streamlined, expedited comparative analysis of the potential applicant's ability to efficiently use the spectrum. The novel features of many of the new technologies render the superficial analysis of a potential licensee's qualifications undertaken in competitive bidding inadequate as a means of assigning spectrum. PCMS-NY has urged the FCC to create a licensing framework that recognizes, by use of a quantitative preference system, the value of small companies, existing radio licenses and technology or service innovation. Let me emphasize that PCMS-NY is not proposing that the FCC hold time-consuming and costly comparative hearing like the first ones we saw for the first top cellular markets. Instead, PCMS-NY supports a streamlined licensing approach based on the recognition of the relative individual qualifications of

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applicants and ensuring that new technologies and services are brought to the American public as soon as possible. In the development of PCS, there has been significant experimentation that should be recognized and encouraged for future services. Only streamlined expedited licensing that recognizes the differences among competing applicants and enables the FCC to consider fully the comparative technical merit and innovation of each applicant will achieve this goal. Such a procedure will also provide the FCC with the flexibility necessary to establish appropriate criteria for evaluating applicants for different services.

As a business executive who has to balance our companies' budgets, I appreciate the Administration's quest for ways to increase Federal revenue. While a competitive bidding proposal for licensing spectrum has appeal as a revenue raising technique, there are better long term solutions that can maximize revenue for the Federal Government without sacrificing the public interest. Reliance on competitive bidding focuses primarily on one-time, non-recurring potential revenues to the Federal Government and disregards other recurring revenue generators. In the long term, the assignment of frequencies through competitive bidding will result in irreparable damage to the U.S. telecommunications industry and disserve the public interest. For true competition to exist, the FCC must develop a system that allows potential licensees to compensate the Federal Government for the spectrum from the revenues produced from use of the

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spectrum. PCNS-NY believes it is unrealistic to expect any potential licensee seeking to provide a new service to the public, other than those with other large service offerings, to commit itself to payment of a predetermined amount of the spectrum, lump sum or otherwise, prior to initiation of the services.

In recognition of the concrete competitive value of fostering a diverse telecommunications industry, PCNS-NY, therefore, recommends that licensees not be selected solely on financial criterion and that if licensees are required to compensate the Federal Government for the spectrum that the level of compensation be determined based on the actual revenues derived from the services and collected on an annual basis for the duration of the license. Since such a system would maximize the number of qualified applicants who apply for a license, the probability that the newly deployed services will be successful will be enhanced and indirectly result in improved government revenues and better economic conditions through the creation of new jobs, the expansion of the tax base and the increased investment in the expanded telecommunications infrastructure. Accordingly, adoption of such a reasonable fee system, if one is required, will balance adequately the revenue concerns of the Federal Government without foreclosing smaller and mid-sized companies from applying for the licenses.

I appreciate the opportunity to testify before the Subcommittee and would be pleased to respond to any questions.

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Mr. MARKEY. And our final witness, Mr. Schelle. Thank you so much for your willingness to participate here today. Whenever you are ready, please begin.

STATEMENT OF WAYNE SCHELLE

Mr. SCHELLE. Thank you, Mr. Chairman, members of the committee. First of all, I want to show our appreciation for you hosting our PCS demonstration last summer when it was very critical, and it was very successful. Thanks again for your committee and your personal interest.

Mr. MARKEY. Thank you, sir.

Mr. SCHELLE. I am testifying today for PCS Action, an association of 12 companies, large and small, dedicated to the rapid deployment of this exciting new PCS technology.

"PCS" stands for "personal communications services," which will range from inexpensive digital telephones to a whole new generation of high-speed, high-capacity wireless computing devices. We believe PCS is the pathway to the future of telecommunications in this country and around the world.

The FCC has been investigating and resolving important PCS issues for the past 3 years. The last step needed to launch PCS is the issuance of final rules—a step the Commission intends to make this year.

We are prepared the next day to start building a new industry that will create, we believe, 300,000 new quality jobs, generate extraordinary new economic activity, and let America take the lead in immense international telecommunications markets.

For PCS, we believe the future is now, today. That is one reason that spectrum auction legislation you are considering concerns our embryonic industry. Because of the potential for delay in implementing a license auction process, and because auctions could favor entrenched companies, represented by the person on my right, and discourage innovation, our members do not favor auctions for PCS licenses.

But if auctions are a fait accompli, given the Government's need to raise new funds, we at least need your help to make the fate play as quickly and as favorably as possible for PCS.

We believe auction rules should be implemented within 180 days of passage of auction legislation. We also believe any such legislation should address the following "final four" issues, or at least preserve the FCC's ability to resolve them as the expert agency.

First, each PCS licensee needs at least 40 megahertz of spectrum to succeed. The bandwidth to which PCS has been assigned by the FCC already has 10,000 microwave users in its neighborhood, and at least a quarter of those, 2,500 of those operators will be there forever. They are public safety.

We need enough spectrum to avoid interference with these existing users, and we need it as well to provide the full range of services that PCS technology makes possible.

Less than 40 megahertz means a pale shadow of what PCS could be. Too much, too much less means no PCS industry at all. These conclusions are not ours alone, Mr. Chairman. Science is on our side, and I just want to represent some science in the form of stud-

ies that conclude the necessity for the 40 megahertz, both company and external company and private consulting firms.

Second, we need PCS licenses that cover large enough areas to make this business viable, valuable and competitive. Small slices of geography will mean the death for PCS.

The cellular industry long ago abandoned the 734 cellular small licenses that were used. Now, just nine cellular companies control service to 90 percent of the American population.

We can do better with PCS. Large market areas will make PCS a worthy telecommunications competitor on day one. They will also make possible the successful integration of rural telephone companies and other small business enterprises into an enormous new industry.

Third, each PCS market should be served by two, or at most three, PCS licensees. We will be launching PCS in a market already dominated by both wireline and cellular telephone services, and balkanizing PCS by issuing too many licenses would keep any PCS licensee from competing effectively with too many licenses and would consign our new industry to the margins of the marketplace. It would also reduce the auction value.

They would also guarantee a smaller payday for Uncle Sam because the more licenses that are granted the less each is worth, and the lower your total auction revenues the less there will be. For proof, we need only to look at the United Kingdom, where licenses have gone begging for precisely this reason.

Fourth, diversity and competition must be protected in any auction process. A major danger of auctioning licenses is that entrenched companies will buy up and warehouse spectrum or use it for their marginal services that shelter their major product lines from competition.

Sensible eligibility standards will ensure that valuable spectrum is put to its best use while preserving the ability of many players to provide PCS services.

Taking the steps I have outlined here will permit our new industry to inaugurate PCS quickly and effectively, and they will also allow the United States—importantly, the United States—to take the lead in the global market for telecommunications and for wireless communications.

Failure to take these steps will render PCS powerless to compete, to innovate, to create jobs, or to contribute to deficit reduction. This committee and the Congress surely understands that those who oppose our "final four" agenda are the same people who will be required to compete with PCS in the marketplace. Keeping us small, keeping us fragmented, keeping us out of the mainstream is obviously in their economic interests, but not in America's.

PCS can be America's economic and telecommunications powerhouse into the 1990's and beyond, or it can become another good idea that didn't make it. I know that is your choice, and I hope you will make the right decision.

If I could, I want to thank you, but I wanted to make one correction or two. Mr. Wheeler mentioned—

Mr. MARKEY. You can get to that in the—

Mr. SCHELLE. I want to make several editorial corrections.

Mr. MARKEY. This is the conclusion of all opening statements of the witnesses, and I think that I can observe that we have reached the point where everyone has—albeit in some instances with some reluctance, that everyone has come to accept the inevitability of auctions. That is the good news.

The bad news is that everyone has a different definition of what the auction should look like, and I think our question and answer period can help to draw that out a little bit more.

[Testimony resumes on p. 163.]

[The prepared statement of Mr. Schelle follows:]

Wayne Schelle
Chairman
American Personal Communications

on behalf of
PCS Action

Before the
Subcommittee on Telecommunications and Finance
Committee on Energy and Commerce
U.S. House of Representatives

April 22, 1993

Chairman Markey and Members of the Subcommittee:

I am Wayne Schelle, Chairman of American Personal Communication, a partnership including The Washington Post Company. I am appearing today on behalf of PCS Action, Inc.

I am pleased to testify today on the promise of personal communications services, or "PCS," and the importance to the public and to the United States that PCS be deployed rapidly. I am also pleased to provide the views of PCS Action on the development of legislation providing for competitive bidding of spectrum licenses.

Members of this Subcommittee are on record as supporting the rapid deployment of new technologies and encouraging the technological innovation made possible by increased spectrum availability. Members of this Subcommittee have also been in the forefront of the development of a new national telecommunications infrastructure. We agree that this must be

done in the context of maintaining a telecommunications system that serves all of our citizens and provides for a multiplicity of benefits. These are critical goals that we strongly support.

Weighing heavily in your considerations today is the Clinton Administration's proposal to produce \$7.2 billion in revenue in five years from license auctions. It appears as if the bulk of the revenues produced from license auctions will come from the pockets of those who seek the deployment of PCS and eventually from the public who will use PCS.

Since we believe and hope that those will, in part, be our pockets, our concern is with ensuring that any process by which PCS licenses are issued -- including auctions -- continues to support the goals of this Subcommittee's commitment to technical innovation, rapid deployment, and increased competitiveness. We will in this statement outline the concepts that we believe are essential safeguards to ensure the fairness of any spectrum auction and to ensure the rapid and effective implementation of PCS.

It is important to note, however, that we do not favor license auctions for PCS. Auctions have never previously been implemented by the FCC. Consequently, if auctions are implemented, delay will necessarily result and jeopardize the benefits of rapid deployment of PCS. The FCC will be required to develop a set of detailed regulations and resolve

contentious legal and economic issues that may well result in extended litigation.

Moreover, wireless spectrum has previously been licensed by lottery or through comparative hearings to incumbent competitive service providers. It would create serious inequities in some circumstances to require new participants to pay for licenses when the government previously issued licenses essentially free of charge. In this regard, auctions do not provide for a level competitive playing field.

Imposition of this significant start-up cost (the amount of the winning auction bid) would seriously impede the ability of potential PCS providers to offer service in effective competition with incumbent wireless service providers. For example, the recovery of \$4 billion in the form of auction bids from PCS licensees over the next five years would equate to an effective charge of \$12.00 per PCS customer per month, or roughly 25% of expected revenues (assuming 1.6 million PCS customers in 1994 and growing to 9 million in 1998). This charge, when added to the costs associated with the relocation of existing microwave users in the spectrum, could cripple PCS at the outset and critically affect the viability of this fledgling industry.

Furthermore, by licensing spectrum to the highest bidder, auctions may not select the licensees who will best serve the public. For example, bidders who currently possess monopoly or

near monopoly power in their markets can effectively drive up bid prices in order to restrict potential competitive entrants to the marketplace, with such excessive bids being supported through monopolistic rents or other cross-subsidies. Thus, auctions could stifle the technical and entrepreneurial innovations that are so important to a new and developing industry. Auctions may also limit opportunities for smaller businesses and rural interests, and ultimately place the U.S. at a disadvantage in the global economy.

However, auctions, at least in part, appear to be the choice favored by Congress and the Administration and our comments on auctions will concentrate on the issues necessary to make such a process work fairly and effectively.

Summary of Comments

The key budgetary issue is that any delay in the timing or retarding of the scope of PCS will necessarily lessen its value, reduce the revenues raised through auctions, and diminish our opportunities to gain the lead in the immense international PCS market. We therefore believe that our interest in rapid and effectual deployment is generally consistent with the government's interest in maximizing revenues and fostering additional jobs. If the wrong choices are made, not only will the future of PCS be jeopardized, but

the government's revenues from auctions and the economic stimulus value of PCS will be reduced.

PCS Action's key recommendations, in brief, are:

1. Any legislation authorizing competitive bidding should require the FCC to undertake a separate and expedited rulemaking for PCS, and to complete its PCS rulemaking within 180 days and conduct the auctions and commence granting construction permits shortly thereafter.
2. At least 40 MHz of spectrum should be assigned to each PCS licensee.
3. PCS licensing should be implemented in large license areas, with consideration for the integration of rural telephone companies and other small business interests.
4. Two, and certainly no more than three, PCS licensees should be authorized in each PCS market.
5. Congress and the FCC must take steps to ensure that PCS is a competitive service providing diversity in wireless communications. This would include a requirement that prevents cellular incumbents and their affiliates at the date of enactment that control more than 20 percent of the population to be served by the PCS license from bidding for that PCS license.

PCS Action

PCS Action is a new coalition of companies promoting the rapid, large-scale deployment of PCS services. The member companies include competitors, companies from different locations in the United States, of different sizes and from different sectors of the American economy, manufacturers and leaders in different technologies such as cable, cellular, and print media. They have joined together to seek the rapid licensing and commercial introduction of licensed PCS for the public benefit.

The members of PCS Action are:

- o American Personal Communications/
The Washington Post Co.
- o Associated PCN Company
- o Cox Enterprises, Inc.
- o Crown Media
- o NCI Telecommunications Corp.
- o Motorola, Inc.
- o Northern Telecom
- o Omnipoint Communications, Inc.
- o Providence Journal Co.
- o Times Mirror Cable Television, Inc.
- o Time Warner Telecommunications

Personal Communications Services or "PCS"

PCS stands for Personal Communications Services. PCS is a family of digital, high-capacity telecommunications services that offer affordable portable communications of both data and voice.

Because PCS are designed to enable people or devices to communicate independent of any fixed location, PCS will allow people to communicate anytime and virtually anywhere. Consumer and business applications include low-cost portable telephony using inexpensive pocket-sized handsets, wireless PBX and computer networks, and mobile transmissions of information to and from laptop computers, palm tops, electronic organizers, and fax machines. Special applications for education, health care, and security are also part of the PCS potential.

The PCS industry is ready now to offer a family of low cost personal communication services. PCS, if promptly and properly licensed, can generate close to \$200 billion in new commercial activity by the end of the next decade and create more than 300,000 good American jobs. Deployment of this new technology and the generation of new jobs and commercial activity depend upon government action, *i.e.*, the issuance of commercial PCS licenses.

Our country's experience with cellular makes it clear that a substantial demand exists for wireless communications services. By bringing more wireless services to more people

and by bringing vigorous competition to cellular and, eventually, the local exchange, PCS will have a broad and favorable impact on American families and businesses. This will result in significantly more competitive prices for all services for all people.

PCS will provide a variety of new voice and data products and services that will provide wide access to new technologies to all segments of our society. The introduction of these services in a viable manner will further develop the telecommunications infrastructure in this country. It will lessen the gap between the information "haves" and the information "have nots." Entrepreneurs, too, will benefit immensely from having PCS licensed services available, and PCS will also provide for locally controlled and locally developed end user services.

Finally, the rapid implementation of licensed PCS will place the U.S. in a very favorable position to promote new products and services throughout the world and improve our international trade balance. PCS is being implemented this year by our industrial competitors in the Pacific Rim and Europe. The sooner we deploy PCS, the more likely it is that we will become world leaders rather than followers in this important area of telecommunications.

Competitive Bidding for Licenses

The Clinton Administration proposes instituting a competitive bidding process for the assignment of spectrum. As we noted earlier, we do not favor license auctions for PCS. Nevertheless, we recognize that there are ways that a competitive bidding process can be implemented so as to minimize delays in the issuance of licenses, ensure minimal administrative and legal complications, and still accomplish the goals of auctions. We believe that competitive bidding that takes into account the following issues can raise the requisite revenue, accomplish other public interest goals, and still permit rapid and effectual deployment of PCS.

Expedited FCC Rulemaking

To ensure that the auction requirement does not delay the deployment of PCS, the FCC should be required to undertake a separate and expedited rulemaking for PCS to be concluded within 180 days from enactment of the legislation, and conduct auctions for PCS licenses and begin granting construction permits shortly after the rulemaking. The FCC has already commenced several related rulemakings in PCS. The comment cycles in all these dockets have closed, and they now are ripe for final decisions. Accordingly, this schedule should be sufficient for the consideration of these matters. It is important to the President's budget goals and to the worldwide

competitiveness of PCS that rapid implementation be mandated by the FCC.

The 40 MHz Issue

The Congress should mandate that at least 40 MHz of spectrum be assigned for each PCS licensee, or make it possible for the FCC to do so. The allocation of at least 40 MHz of spectrum for each licensee is essential both for the development and successful implementation of PCS technology and for the economic viability of the auction process itself. Comprehensive studies show that any allocation less than 40 MHz would cripple the deployment of PCS and jeopardize the public interest.

PCS is being implemented in a band that now supports almost 10,000 fixed microwave systems. It will not be able to obtain spectrum free and clear and therefore the successful deployment of PCS depends upon the success of spectrum sharing. Thus, only a portion of the spectrum allotted to each PCS licensee will be able to be utilized for PCS service. According to one study by an independent frequency coordination firm, microwave incumbents typically can prohibit the use of any spectrum for PCS within a 20 MHz allocation. If PCS licensees are allocated 30 MHz there is very little improvement, because use of spectrum within the PCS allocation will be blocked more than 20 percent of the time. With an

allocation of 40 MHz, however, there is adequate room for the operation of PCS without interference -- a 40 MHz allocation opens up at least twice as much spectrum as either a 20 or 30 MHz allocation.^{1/}

A spectrum-availability study of the top eleven cities in the U.S. shows that where five licenses are allocated 20 MHz each, nearly 30 percent of the total area had no spectrum at all available for the implementation of PCS due to use of spectrum by incumbents.^{2/} Even accounting for the relocation of some microwave users, some cities averaged over 20 percent of their area having no spectrum available for PCS.^{3/} A study of the San Diego MTA (major trading areas or "MTAs" as defined by Rand McNally) indicates even more severe problems for the San Diego area.^{4/}

Forty MHz allotments to each licensee are necessary so PCS can coexist with microwave users during a transition period while some microwave users are reaccommodated to other bands. According to one recent study focusing on Detroit as a

1/ See generally Comsearch, "Analysis of the 20 MHz, 30 MHz, & 40 MHz PCS Block Allocations," Comments of MCI Telecommunications Corp., FCC Gen. Dkt. 90-314 (Nov. 9, 1992).

2/ See generally American Personal Communications, "Report on Spectrum Availability for PCS," FCC Gen. Dkt. 90-314 (Nov. 1992).

3/ See *id.*

4/ See Reply Comments of Cox Enterprises, Inc., FCC Dkt. 90-314 (January 8, 1993).

representative metropolitan area, an allotment of 40 MHz requires less initial relocation of public safety microwave than with a 20 or 30 MHz plan. A 20 MHz plan would result in extensive disruption, requiring approximately 50 percent of the existing microwave links, including 100% of the public safety links, to be relocated within 3 years of licensing. (Such massive relocations would not, of course, be permissible under the FCC's "transition plan.") By comparison, a 40 MHz allocation would permit up to 10 years for the relocation of public safety links.^{5/}

Finally, unless the FCC allocates at least 40 MHz per PCS license, spectrum auctions will not permit the participation of the entrepreneurs currently developing PCS technology because an allotment of less than 40 MHz will be much less attractive technologically and economically. Smaller blocks of spectrum would preclude PCS from offering vitally important high-speed data services important to building a communications infrastructure of the future.

An allotment of less than 40 MHz of spectrum to each licensee could limit the field of potential bidders to those who can combine the insufficient spectrum blocks with existing spectrum. Bidders with existing spectrum may have little incentive to build a full-fledged PCS system and develop a

^{5/} See Comsearch, "Spectrum Allocations and Their Impact on Microwave User Relocations: A Case Study" (March 12, 1993), a copy of which is attached to this testimony.

broad, vital, and competitive PCS industry, and the public will ultimately lose out. Because an allotment of less than 40 MHz per license would limit the field of potential bidders, it would minimize federal revenues. An allotment of less than 40 MHz could remove from the process the entrepreneurs and new entrants that are promoting the rapid deployment of PCS in this country due to the inability to fully deploy PCS technology with inadequate spectrum. If companies vitally interested in the development of PCS are foreclosed from participating in license auctions, auctions will raise nowhere near the revenue projected by the Clinton Administration.

The specific nature of a spectrum license (as well as some of the other regulatory issues addressed below) has traditionally been within the authority of the FCC. We believe that in this case it is important to direct the FCC to adopt 40 MHz per licensee to permit the development of an effective and competitive PCS industry and to achieve auction goals. However, if the Congress decides not to give specific directions to the FCC in this regard, we believe it is critical to make sure that the FCC retains the authority to make spectrum allotment decisions, including providing 40 MHz per licensee, in order to achieve the policy objectives described above.

Market Size

PCS licenses should be awarded on the basis of large markets. The multiple goals of raising revenue and bringing the benefits of PCS to the American public cannot be met by imposing unrealistically small licensing areas on the PCS industry.

PCS can succeed only if it is able to realize the economies of scale that have proven necessary in the existing wireless industries. For example, while the FCC licensed 734 cellular service areas, now only nine cellular companies control markets comprising 90 percent of the country's population. The cellular industry has become concentrated in large service areas and most cellular carriers are now affiliated with one of the two national marketing alliances for cellular service, MobiLink or Cellular One.

Consumer demand has led cellular's evolution to wider geographic coverage with increasing movement toward the development of seamless nationwide roaming capabilities.^{6/} Today's consumer expects mobile service to be completely mobile. Major providers of mobile services recognize that the geographic scope of their service must keep pace with consumer expectations. To address the demands of cellular consumers for ever broader service coverage, for example, the major cellular

^{6/} See, e.g., Cellular Telecommunications Industry Association, "Seamless Network Request for Proposal" (Nov. 13, 1992) (RFP for SS7 network to allow national roaming).

providers emphasize in their marketing the geographic breadth of coverage above all other factors. Indeed, market surveys repeatedly show that inadequate service area leads the list of reasons why cellular subscribers switch cellular providers.

Consequently, a dominant trend in the cellular market has been what Craig McCaw calls "the regionalization of the industry." In his view, the consolidation of cellular "create[s] the most desirable service for customers."^{1/} Emphasizing his 1989 observation that the U.S. "is the only country in the world that does not have a national cellular license,"^{2/} McCaw has for years boasted about his company's mission to "transform[] cellular from primarily city-by-city technology into a North American network in which cellular telephones will work in a consistent way across the United States, Canada, and Mexico."^{2/}

This concerted effort to create large markets also is reflected in the public statements of other major cellular carriers -- including GTE, ALLTEL, Centel, U.S. Cellular,

^{1/} See McCaw Cellular Communications, Inc., "Cellular Communications: A Vision of the Future" 6 (Oct. 20, 1989).

^{2/} Id.

^{2/} McCaw Cellular Communications, Inc., 1990 Annual Report 1 (1991).

Vanguard, Metro Mobile CTS, and SMET.^{10/} Fleet Call (now Nextel) has followed an identical strategy in creating a near-national ESMR market.^{11/}

Consumer demand for wider area coverage is not the only factor that has led to the consolidation of the cellular industry. Equally important have been the economic efficiencies of seamlessly integrated large geographic service areas. As the annual reports of various cellular providers show, these wider area systems cost less to operate.^{12/} The key to operating economies is a large service area.

Thus, large geographic areas for PCS are competitively essential. PCS cannot provide the effective price and service competition to existing mobile service providers that Congress desires if PCS is marginalized in small, ineffective licensing areas.

PCS licensing should be implemented in large areas. Markets that approximate LATAs, MSAs (metropolitan statistical areas), RSAs (rural service areas), and BTAs (basic trading areas) fall far short of the large service areas needed for effectual deployment of PCS. Cellular roll-out based on MSAs

^{10/} See, e.g., Huber, Kellog & Thorne, "The Geodesic Network II: 1993 Report on Competition in the Telephone Industry," pp. 4.68-4.75 (1992) (collecting public statements of these companies).

^{11/} See Fleet Call, Inc., 10-K Stmt. pp. 2-3 (1992).

^{12/} See Huber et. al. at 4.80-4.81.

and RSAs was possible, though slow and inefficient, because there were no existing competitors against which the new-born cellular entities had to struggle. But PCS will have to roll out against entrenched cellular operators who now have expanded into large regional service areas utilizing national roaming and branding agreements.

If this were a half a century earlier during the dawn of commercial aviation, fractionalized licensing would be analogous to a railroad industry sponsored requirement that airlines be licensed to fly only in small selected areas. While the requirement ostensibly does not prevent the deployment of the new technology, it effectively prevents the new technologies from competing with the entrenched technologies. Stacking the deck against new, competitive technology only serves the status quo. Failure to provide the climate necessary for deploying PCS effectually and rapidly will deprive the American consumer of additional choices and new products and services.

Realistic market size is important for raising revenue for the Treasury as well. Small, isolated markets will not garner significant bids. Moreover, we in the new PCS industry know at the outset that large service areas will be necessary for PCS to be provided nationwide. Using licensing areas of inadequate size will produce a second, private auction, much like was produced by the lottery process for cellular. Initial

auction bids for all PCS areas would be depressed if bidders knew at the outset that the delays and costs of a second private auction would be necessary to combine these small licensing areas into realistic, large service areas. Speculators would be encouraged to "buy low" from the government and "sell high" to PCS companies. The small business entities whose participation is sought to be fostered by this type of plan would be squeezed out entirely. The significant costs required by a second, private auction would be borne by American consumers, result in windfalls to speculators, and be forever lost to the Treasury.

Finally, from a practical standpoint, the FCC does not have the resources to conduct hundreds of auctions quickly. Therefore use of small licensing areas will undoubtedly delay implementation of PCS service to the public.

Two, and No More Than Three, Licenses

The legislation should also specify that two, and certainly no more than three, PCS allotments are created in each PCS market. Landline, cellular, SMR, and other mobile service providers exist today and will compete in each market with future PCS providers. If too many PCS licenses per market are auctioned, the potential market share of any one PCS license would be very small (compared to the large capital costs necessary to construct a full-scale PCS system) and the

chances for any licensee to succeed against entrenched competitors would be minimal. Bidders would place a very low value on such licenses, and bids would be depressed.

The experience in the United Kingdom, where for years there were spectrum allotments with no takers, demonstrates that authorizing too many licenses diminishes the revenues that can be realized through an auction. The only serious bidders that would have an incentive to participate in such an auction might be entrenched competitors, which could combine a small license with cellular's current 25 MHz of clear spectrum.

The Congress should mandate these PCS allotments and, at a minimum, not prohibit the FCC from exercising its discretion. We believe that this issue, like the 40 MHz issue, will define the value of the license. If the FCC is directed to assign more than three licensees, the value of any license will be greatly reduced. This reduction in the value of the license will in turn result in shortfalls in the auction revenues to be collected.

Diversity & Competition

To the extent that auctions are intended to more efficiently achieve the goals of comparative hearings, the Congress and the FCC will want to provide for competition and diversity among the ranks of PCS providers. Small businesses, minority-owned enterprises, and rural telephone companies

should have an opportunity to participate in the development of PCS. To ensure the rapid deployment of new spectrum-based technologies by a diverse group of qualified licensees, Congress and the FCC must take steps that will increase (not decrease) competition.

The fact is that the public and the U.S. economy will benefit from the granting of new radio spectrum licenses only if the licensing process facilitates the rapid and effectual introduction of new spectrum-based technologies. Some parties, however, have economic interests and incentives that are adverse to the rapid deployment of new wireless services in their market areas. The Congress and the FCC thus must guard against strategies such as the warehousing of spectrum, *i.e.*, the acquisition of spectrum merely to deny it to competitors and competitive technologies.

One of the steps that Congress and the FCC should take is to impose a requirement that would prevent cellular incumbents that control a substantial portion of the existing cellular market in those areas covered by the PCS license to be auctioned from bidding for that PCS license. Specifically, any auction enabling legislation should include a bidder eligibility requirement that would bar in-region cellular incumbents and affiliates at the date of enactment of the legislation from obtaining a PCS license unless such an

incumbent controls less than 20 percent of the population in the PCS license area.

The licensing process for PCS also should ensure rural telephone company participation without sacrificing the critical competitive need for sufficient spectrum, size of license area, and number of licenses per market.

Bidding Procedures

PCS Action believes that should the auctioning of spectrum be implemented, the FCC should have the discretion to determine a method of bidding and a method of payment. This entails leaving to the FCC's discretion the need, if any, for a minimum bid requirement. While the agency may wish to establish bidding guidelines, the FCC may decide that a minimum bid requirement is contrary to rapid implementation of PCS. If the market does not respond to the level set by Federal appraisals, then the answer may very well be that keeping the allocated spectrum out of the market is not in the public interest.

If auctions are to work they must be able to respond to market demands, including low and high prices. To require an arbitrary minimum would create regulatory complexity and could delay the implementation of PCS. Each assignment area may require a different minimum and inevitably the FCC will have to go through a lengthy and complex procedure to appraise

the value of each market. These appraisals could be challenged and litigated, creating administrative and judicial delays -- exactly what auctions were supposed to avoid.

Exceptions To Auction Process

We believe that the FCC should continue to have the discretion to assign licenses (or their equivalent) outside of the auction process in order to promote technology, innovation, and rural and small business interests as it has in many categories in the past 60 years. Thus, any auction legislation should ensure that the FCC has the authority not to apply the competitive bidding requirement on a case-by-case basis.

Conclusion

PCS Action supports efforts to ensure the rapid and effectual implementation of PCS. The use of auctions raises many difficult issues. However, auctions, if implemented, should be done with a great deal of care and with the use of safeguards that assure PCS a fair opportunity to achieve its very promising potential. Auction legislation that fails to take these safeguards into account would endanger a vibrant new industry on the eve of its emergence and severely erode the potential Federal revenues that could be generated by auctions.

Mr. MARKEY. Let me recognize now, after I put, with unanimous consent, the opening statement of the ranking minority member of the full committee, Mr. Moorhead, and any other members that wish to do so, in the record at the appropriate point. Without objection, so ordered.

[The prepared statement of Mr. Moorhead follows:]

STATEMENT OF HON. CARLOS J. MOORHEAD

Mr. Chairman, I want to commend you for holding this hearing. I also want to commend my colleague, Mike Oxley, who has strongly endorsed this issue for several years and now has a bill before the subcommittee. He, the Bush and Clinton administrations, and other supporters deserve much of the credit for proposing the concept. I only wish we had taken the issue up sooner.

Auctions is a concept whose time clearly has come. Auctions mean American taxpayers can begin to get a return on making spectrum, which is a scarce public resource, available.

While this resolution in wireless technology is indeed exciting, it is also inherently unpredictable. Those interested in bidding for spectrum are in the best position to know what the spectrum is worth.

To be sure, though, the winning bidder should not always be the one with the deepest pocket. Congress needs to ensure that smaller entrepreneurs can participate as well.

Mr. Chairman, I again commend you for holding this hearing. I look forward to the testimony of our witnesses.

Thank you.

Mr. MARKEY. The Chair recognizes the gentleman from Ohio, Mr. Oxley.

Mr. OXLEY. Thank you, Mr. Chairman. Mr. Schelle, I would like to start with you. You make reference to the comprehensive studies that you have before you there supporting your position, PCS Action's position that any allocation less than 40 megahertz would cripple, if indeed not kill off, the deployment of PCS.

Let me ask you this. Are the studies potentially flawed from the standpoint that you are assuming sharing of the spectrum rather than clearing of incumbent microwave users from the proposed PCS band? And, in fact, isn't it so that Mr. Wheeler's companies and operations use far less than 40 megahertz and appear to be quite successful in doing so?

Mr. SCHELLE. First of all, we are assuming that we have to share our spectrum with the fixed microwave users, of which there are 10,000, of which 2,500 will stay forever. In some cities, these studies show that only 9 or 10 megahertz will be available until that spectrum is cleared, and in some cities there will be no service in the center of the cities at all because of the large—LA, Houston, et cetera.

The studies indicate several things. That while there is the transition, moving the fixed microwave users, we will need a tremendous amount of spectrum. The difference between—you said about Mr. Wheeler's companies operating successfully, and they do, but they are only offering cellular services. You have to think of PCS as offering cellular-like services, data transmission services. You have to think of it as sort of an intelligent pipe that is going to transmit virtually all kinds of information services, all kinds of business services that are going to be much more extensive than what cellular operates.

I have always loved cellular. I have been in the cellular business 13 years. It was there that I did a lot of my dreaming, and I moved

my dreams on to PCS. The difference is PCS needs to do and will do for the country much more than just two-way cellular conversations or high-speed mobile conversations.

Mr. OXLEY. Do you see the PCS concept replacing the cellular? Will this be the technology that makes Mr. Wheeler's companies obsolete?

Mr. SCHELLE. You would think that that would be the case from the way he has tenaciously opposed PCS, but that really won't be the case. I think the cellular business will be very viable for a long, long time and will do a number of things beyond just voice communications itself.

But no, I don't believe it will end the cellular business. I know that my associates and I believe that at best it might take some marginal customers away who feel that they may not be able to pay the \$80 and the \$90 a month, but could afford \$30 to \$40. So I think there will be some. Maybe 10 percent. Maybe 15 percent.

But cellular should not worry. It would be a great business. I haven't sold any of my cellular stock.

Mr. OXLEY. Well, what about—do you want to issue a disclaimer here before we continue.

Mr. SCHELLE. I have so few.

Mr. OXLEY. I thought you might want to issue a disclaimer like Lou Rukeyser does every week.

Well, let me ask Mr. Wheeler to—he has been champing at the bit over here.

Mr. WHEELER. You have noticed.

Mr. OXLEY. Yes.

Mr. WHEELER. I guess I would pick up with the point that you made on behalf of Mr. Synar that we are in a land rush, and the name of the game—what have I been tenacious about.

Mr. MARKEY. I also want to point out that you went to Ohio State as well.

Mr. WHEELER. That is the thing that really offended me about that.

Mr. MARKEY. I realized that. I think full disclosure is warranted.

Mr. WHEELER. This is a tough crowd.

The thing that I have tenaciously been concerned about is going in to the new land, the spectrum, and saying I have got to have as big a chunk as possible because it is there, and I can understand that. That is human nature. That is business nature. But that doesn't make it right or doesn't make it technically or economically necessary, and let me address a couple of those in detail.

I did not bring my stack of documents that challenge that, but I will be happy to submit them for the record. There are two things, though, that I think are important. One you touched on, Mr. Oxley, and that is, let's assume that Mr. Schelle is right. Let's give him the benefit of the doubt and forget, by the way, the Pioneer's Preference that he has on a technology that he got a Pioneer's Preference for so that cellular and microwave can exist together in the same area. But let's give him the benefit of the doubt and take away half of that spectrum. There is now 20 megahertz of spectrum out of their 40 that they can "use."

When you use digital PCS technology in that 20 megahertz of spectrum you get 4,000 channels. The cellular industry in 25 mega-

hertz of spectrum, analog, gets 60 channels. As Mr. Schelle said, we have been very successful with 60 channels and we are fiercely proud of it. Four thousand channels is what you would get with half of what he is asking for, so I think there is a business opportunity there in that situation.

Secondly, it also seems as though the auction probably solves the problem because you will look at individual pieces of spectrum to be auctioned. And when you go in to look at something in Los Angeles where there is microwave interference that is going to be less—of less value, and you will talk to the existing incumbent and you will find out whether or not he is going to move or what it is going to take him to move and that will determine both what will be auctioned and the value of what will be auctioned. So one of the brilliances—the brilliance of the auction process is it probably does go a long way to solving the concerns that Mr. Schelle raises. That I really don't think are concerns, but he still does.

Mr. SCHELLE. Mr. Oxley, if I could come back on that.

Mr. OXLEY. Yes.

Mr. SCHELLE. The data that we have here is the data that we submitted as part of our Pioneer's Preference—my company is American Personal Communications. This is the data that we provided the FCC, which in part were the reasons that we did receive Pioneer's Preference. Because we were told initially, back in those early days when there weren't many applicants, not much going on, we were told by the Commission and others there wasn't any spectrum available, and if it was it was all congested. We submitted there was available spectrum, that it could be avoided by sound technology, and we submitted this and a lot of other things over 3½ years, and the FCC agreed that it would work.

My concern with Mr. Wheeler is I think you are judged by the company you keep, and if you look at the companies that he keeps, they are the ones who are saying we should only have 20 megahertz, we should be confined to small areas, which will cause us to be born dead. I think all you have to do is look at what companies filed what. All the innovative companies filed pretty much the same. And basically, most of Mr. Wheeler's companies did most of the same things also. They wanted to fragment us, and they want to, basically, see us born unable to compete.

Now, you can see he gets a little excited also when he talks. I haven't gotten to my comments that I first wanted to make, when he said about the Washington Post selling cellular. If I could say that now, I will.

I want to just say the Washington Post sold Miami, Florida. It was the only market. He said there were four that they sold. They sold pieces of less than 20 percent of several others. But the only market they had was Miami.

Mr. WHEELER. They reported a \$135,000 after-tax gain.

Mr. SCHELLE. No, \$165 million.

Mr. WHEELER. I am sorry. Thank you. Did they report \$165 million?

Mr. SCHELLE. Yes.

Mr. WHEELER. Did that establish—all I am trying to say is that established a price as to what this stuff is worth. Right?

Mr. SCHELLE. But \$165 million is a small number compared to many of your members.

Mr. OXLEY. Well, let me just break in. I have a striped shirt on here. You know, for Members like myself and Mr. Slattery, this might be an academic exercise, because essentially you are talking about the most congested urban areas in the country, are you not? Both of you? All of you?

I guess from my perspective I have to ask you, given this whole issue, and I am sure I ask for my friend from Kansas as well, what is in it for us? Or do we have to be worried about small start-up companies like the Washington Post getting Pioneer's Preferences for cities like Miami when communities like Russell, Kansas, and Findlay, Ohio, might have more difficulty, if not any opportunity whatsoever, to share in this great technology?

Mr. SCHELLE. Mr. Oxley, PCS is going to be a nationwide service. Every city in the United States, big and small. Russell, Kansas, will be covered by PCS. The people in Russell, Kansas, men, women and children, business people, safety people, health people, will all be using PCS equipment. And it is going to be a nationwide system at a much lower cost than exist with other technologies today.

So it is a service that is going to come to every part of the United States, and we hope there will be a big, major American export business into the world.

Mr. OXLEY. Thank you.

Mr. MARKEY. Mr. deKay, did you want to comment?

Mr. DEKAY. I think I want to jump in here. You know, we are off the subject of this question here when we debate how many licensees and should it be 40 megahertz or what have you. The question is how do you allocate licenses? Do you use spectrum auctions?

And, if we hear the advocates of two different sides—you know, it is a fairly arcane subject. You have got all the studies here. Our position as a trade association that represents, you know, three of the four companies here would be that this is a very detailed subject that the FCC ought to address as far as what types of services and the various allocation schemes and how broad the market areas ought to be. That really is best left up to the FCC.

In terms of the issue of auctions versus the royalty payment concept, as a businessman that does a lot of buying and selling individual companies I can tell you it is very difficult to evaluate an offer, if you are the Government, for an auction. Let's say a major company in an auction bids a billion dollars for a particular market, and you have an entrepreneur that is proposing another service with a royalty fee that is competing for that same spectrum. One of the problems with auctions is that it would be very difficult to evaluate that up-front payment. Well, you know what that is. But compared to the royalty fee, which is what we are trying to look at to address the small business issue, it is impossible to evaluate those things.

When Xerox was founded—we had the example earlier—no one had any idea what it would be worth. When the cellular industry was founded, I know the early Bell System forecasts were a fraction of what we have achieved to date in terms of penetration. We had no idea how to evaluate a royalty.

And that is the problem we are having with the—if you have an auction and a royalty for the same spectrum, you can't evaluate it. Then it becomes more of a comparative hearing, I would think, because you would have to decide the merits of that particular business plan.

We had a hard time as an association grappling with the position to take on this. We would like to work with, you know, the Congress and the staff with various ideas. We also think the lotteries can be improved. We have examples of lotteries where there have been higher up-front fees and various criteria that have reduced the number of people who have applied to legitimate operators.

Mr. MARKEY. The gentleman's time has expired.

Again, we want to work with everyone here, but you don't have much time. The wagons are lining up. It is Oklahoma 104 years ago. So, if you want to be participants here, you have got a couple of weeks, at the maximum, if you want to have your comments fully weighed.

The Chair will recognize himself now, and let me raise a couple of other subjects, if I could. I think it is fairly well known that I have some concerns about foreign ownership of vital communications links in the United States. Other countries in the world almost uniformly have rules that deal with that subject as well.

PCS is, it seems to me by all of the testimony which we have heard today, going to be an essential communications system in our country's future. And it is, as well, not identical but analogous to the role which cellular plays today in our national telecommunications structure. Now many people suggest that PCS should be treated more as the specialized mobile radio industry is treated, in other words, more private carriage than public carriage.

I am concerned about that. And I am concerned about the demise of public carriage as a concept as we move into this new era. Help us to think this issue through, each of you. How should we treat this issue? How should it be dealt with in terms of this public/private carriage dichotomy?

Let me begin with you, Mr. Roos, if I could.

Mr. ROOS. Well, I think the most important aspect of this lies in the ability to get these services in place quickly. The ability of U.S. manufacturers to produce is being taken at risk the longer we delay this process because the foreign manufacturers, and even the foreign investors that would like to be involved in this business, are significantly ahead in the production of various facilities.

For example, this is a message card. It was first introduced by NEC which is a very—

Mr. MARKEY. OK. That is fine. But what about my point?

Mr. ROOS. The point being that—

Mr. MARKEY. You can use your prop at another time, but we have this public/private carriage question.

Mr. ROOS. We are an FCC licensed common carrier. We believe that putting services out to the whole population on an equal basis is imperative. There are some narrowing of the definitions that are in the radio marketplace, but we believe that a service should be done on a common carrier basis.

Mr. MARKEY. So similar services should be treated similarly?

Mr. ROOS. Yes.

Mr. MARKEY. OK. Mr. deKay?

Mr. DEKAY. Our association's position on this is that there is a variety of pros and cons in private carrier/common carrier. The problem is that both companies are offering similar services. For example, specialized mobile radio is a private carrier service but it is now being configured to offer services very similar to cellular common carrier.

Mr. MARKEY. Should that be regulated as a common carrier as well?

Mr. DEKAY. Well, I think my point there would be that maybe there ought to be a level playing field.

Mr. MARKEY. The level playing field, should it be public or private?

Mr. DEKAY. The problem with it being public is State regulation on certification and barriers to entry. I think if you take the traditional common carrier route it would create certain problems for PCN and other services, and we as an association would argue that the private carrier/common carrier issue should be looked at in a broader context. There is the issue of foreign ownership on one side versus—I mean you have got to sort of level up the playing field, as opposed to addressing it one piece at a time.

Mr. MARKEY. So you would then agree that we should select either public or private carriage and just go with it on a uniform basis. Is that it?

Mr. DEKAY. Yes.

Mr. MARKEY. And you wouldn't care which way we went as long as it was level? That is your only value?

Mr. DEKAY. That is a key value. There is a problem with common carrier, if you select it, in that it does—with State regulations, it will impede service, going through State certification and regulation.

Mr. MARKEY. But we are concerned about non-discrimination and cost and other issues as well. So there is a balance there as well. You want things quickly, but you also want them with some other values included. But this level playing field concept is something I think that we will keep in mind.

Mr. Schelle?

Mr. SCHELLE. Mr. Chairman, our association does not have a position on common versus private, so I can't comment on that, other than I would be happy to make our company comments available to you afterwards.

Mr. MARKEY. You could give them to us right now, if you would like.

Mr. SCHELLE. I really think I would get into more trouble by giving them to you right now.

Mr. MARKEY. Mr. Wheeler?

Mr. WHEELER. Mr. Chairman, I mean I think you put your finger on a key thing and that is the problem is every time a new technology comes along it gets shoved into an existing regulatory cubbyhole, and probably you have got an opportunity here not to think so much in terms of private carriage versus common carriage, but hey, let's recognize wireless—let's say there is wireless carriage and what are the rules we want to establish for wireless carriage,

writ large, because it is hard to fit them all into the pre-existing cubbyhole.

Mr. MARKEY. One final question. Then I will move down the line here.

That is the issue of churning and what rules we should have on the books to deal with this issue, and perhaps this gets to the Washington Post question, and it also deals with a number of other issues for radio and television, and cable licenses as well. In the 1980's there was a real phenomenon here. Perhaps this industry led the pack. Seventy percent of the total of 1,585 cellular licenses were transferred at least once during the 1980's. A very high turnover rate, without question.

What anti-trafficking rules should we put on the books in order to ensure that we do have those who are interested in long-term ownership and commitment to a community involved right from the get-go of whatever process we put in place? Mr. Roos?

Mr. ROOS. Well, this is definitely a long-term investment criteria from our perspective. It takes 3 to 5 years to break even on cash flow on just the investment. You add in the royalties and the rest of it, it has to be a long-term business. If you were disposed to take a license that you had gotten and had paid the full amount and incurred a capital gain, our recommendation would be that the Government have some kind of a tax at the end on the sale of a profitable investment, so that it could make up whatever revenue it might have lost in the interim.

Mr. MARKEY. Do you think, then, that we should have some time period as an anti-trafficking rule? Three years? Five years?

Mr. ROOS. Our comments to the FCC have been 2 years.

Mr. MARKEY. Two years?

Mr. ROOS. Yes.

Mr. MARKEY. And how about construction deadlines, Mr. Roos?

Mr. ROOS. Construction deadlines are more difficult because the process of acquiring the necessary capital, even with the surety of the license, is a 6- to 8-month process. And then if you are building a wide area, it will take a good 2 years to put it in place. So something that says you have to have all your sites up within a period of less than 2 years we think is unrealistic.

Mr. MARKEY. I am asking you, nor do we intend at this hearing, to select a number. But in each instance both for the time that has to elapse before a license can be turned over or the amount of time a winner has to construct—time deadlines do make sense.

Mr. ROOS. Yes.

Mr. MARKEY. You do agree with that?

Mr. ROOS. Yes.

Mr. MARKEY. Mr. deKay?

Mr. DEKAY. I absolutely agree with it. Time deadlines make sense. They depend on the service.

Mr. MARKEY. We agree. And that is why the FCC, you know, would have to look at the various—

Mr. DEKAY. Your churning factor is also dependent on the size of the territories you allocate. If you have, you know, MSA's and RSA's where you have hundreds of territories, then there is a natural reconfiguring that causes some of the—

Mr. MARKEY. People argue that the smaller the bite is the more likely it will have to be churned. Is that correct?

Mr. DEKAY. Yes.

Mr. MARKEY. Mr. Schelle?

Mr. SCHELLE. We support anti-trafficking. We have no specific hold from the association. Personally, our company has recommended 3 years in all of our recommendations to the Commission.

Mr. MARKEY. And what about construction deadline?

Mr. SCHELLE. The construction deadline in cellular was 18 months, and is 18 months, and I think that is a reasonable amount of time.

Mr. MARKEY. Thank you. Mr. Wheeler?

Mr. WHEELER. Yes to anti-tracking. Yes to construction deadlines.

Mr. MARKEY. OK. Thank you.

My time has expired. The Chair recognizes the gentleman from New York, Mr. Manton.

Mr. MANTON. Thank you, Mr. Chairman. I will direct the question to Mr. Wheeler.

Mr. Wheeler, I think most of us here today would agree that this particular spectrum auction proposal by the administration is driven in large part by the need to raise additional revenues. But, as members of this committee, we must also ensure that a spectrum auction makes good sense with respect to our national communications policy.

You and some others have expressed support for opening the bidding process to the maximum number of competitors possible. My question is, in your opinion, how would that affect the total amount of revenues raised through an auction, and what are the policy implications on opening up the auction to all parties?

Mr. WHEELER. I think there are two issues there, Mr. Manton. One is that if I take an asset and sell it 5 times I am probably going to get, as a gross dollars, more than if I sell it once or twice, number one.

Number two, the only way that that would not be true is if I am acting as a monopolist myself in order to allow the person who buys it from me, to incent the person who buys it from me to be in a position which is not competitive and therefore be willing to pay me more for that asset so that you put out one or two licenses and you say this is all there is going to be, so you better bid everything there is, and the implication is because you can turn around and the consumer is not going to have an alternative so you can recoup all the extra money you are paying me. And I don't think that those are the kinds of options we would have.

I think the more people are in the market the more competition for the spectrum the better, and the more competition in the market for the consumer the better, and those two weigh themselves out to the public benefit.

Mr. MANTON. The Congressional Budget Office estimates a spectrum auction would raise \$7.2 billion. If your industry, the cellular industry, were barred from PCS spectrum, how much less would the Federal Government raise through a spectrum auction?

Mr. WHEELER. Gee! I don't know, Mr. Manton. As I indicated in my testimony, I think that the CBO is light based on what people have paid for cellular licenses.

Mr. MANTON. Do you aggregate that?

Mr. WHEELER. I think, you know I think that—I mean you take what they are saying in the CBO is about \$2.2 billion per license, I believe, and if you did that across 5, you would have \$11 billion instead of the \$7.2 billion they have got.

But clearly, if somebody who has an incentive to grow out of their existing narrowband service into a broadband service is denied the opportunity to do that in their market, then you have taken out somebody who really wants to play. It is like, for instance, Mr. Schelle representing my friends in the cable industry. That they want to grow out of their broadband wire service in that market and get broadband wireless service. There are some real economies for them to do that that would incent them to bid up the price. I don't think that we ought to keep the cable companies out. I don't think we ought to keep MCI out. I don't think we ought to keep those other companies out. And all of those folks together will get a fair price and at the same time have competition at the retail level with the consumer.

Mr. MANTON. Last question. In your view, what would be the ideal number of licenses up for bid per market, and what should that market be?

Mr. WHEELER. We agree with the Small Business Administration and their proposal that it be 5 licenses, 20 megahertz, and the 734 license areas for cellular.

Mr. MANTON. Thank you. Mr. Schelle, you raised your hand.

Mr. SCHELLE. I can't wait. The five licenses per market is going to kill the PCS industry because there will be so many licenses that the only people who will win them and keep them will be the entrenched players who will warehouse them.

Number 2, 734 licenses took 10 years to award in the cellular business. They are fragmented. The cellular industry, if you read a lot of their annual reports, the McCaw annual report speaks about what a mistake it was to award licenses on the MSA/RSA basis. If I have which annual report it was here. They have consolidated because of the needs to be more efficient. The 734, again, cause us to be dead.

What we are saying about who should be able to bid, we are not saying—we are not recommending that the cellular companies cannot bid. All we are saying is they should not bid in their home markets where they already enjoy an entrenched duopoly that they have enjoyed for over 10 years. Anywhere else in the United States, they can bid. For instance, if it is Southwestern Bell, they just can't—they have one of the two licenses here—and by the way, they only have two licenses. It is nice to be able to say you want five and you are for competition when you are only one of two.

But all we are saying is, if Southwestern Bell was able to bid and win a license in Washington, they would have such an entrenched advantage by virtue of having salesmen, marketing, back office, advertising, sites, zoning, that we would not have a chance to compete against them.

This all sounds good over here, but believe me, this is the friendly undertaker that is coming in to bury PCS before it gets off the ground.

Mr. MANTON. Continuing with the Wheeler/Schelle Show, Mr. Wheeler, do you have some rebuttal?

Mr. WHEELER. Yes, I just have—no, I don't really. We have heard Mr. Schelle say that. Let me ask a question. If cellular companies shouldn't have the right to bid for spectrum in their service areas, should cable companies?

Mr. SCHELLE. Cable companies are not operating a mobile service. It is a whole different industry.

Mr. WHEELER. There is also half as many competitors.

Mr. SCHELLE. Right.

Mr. WHEELER. OK. The FCC had an interesting study come out of their Office of Plans and Policies in which they said that, you know, there really are economies of scale of letting cable companies and cellular companies in because they have assets that can be shared and that the consumer will benefit from that.

And what you are saying is that the cable company should be allowed to share in its assets locally, for instance, hanging the cells from its wires, using its trunking capacity that the cellular company has to build, et cetera, et cetera, but a cellular company should not be given the same opportunity. Is that your position?

Mr. SCHELLE. Because the infrastructure is already in place by the cellular company, which is a tremendous advantage. You know, what I just said recently about 18 months is legitimate to build a system, it is. But the cellular industry can build a system, Bang! like that, because they have everything already in place.

Mr. MANTON. Isn't that good for the public?

Mr. SCHELLE. No, I don't think so.

Mr. WHEELER. Well, all I am trying to say, Mr. Manton, is that I think that all telecommunications providers want to grow into the next generation of services, and they ought to. And what is wrong, however, is when one provider whose got a position in the marketplace says, You know what? My business can be better tomorrow in these new services if I keep potential competitors out. And therefore let's keep other folks out and give me as much spectrum and as much geography as possible. That is the concern.

I am for equality. I am saying, Let the cable guys in. Let the cellular companies in. Let MCI in. Let's go.

Mr. MANTON. Well, let's hear from Mr. deKay. Then Mr. Roos.

Mr. DEKAY. I guess, you know, obviously we can go back and forth on this particular issue. Given the nature of our members who are cellular companies who are PCS applicants, paging companies, we are not able to reach a consensus that it should be three or five, but we do have a clear consensus that the decision should not be dictated on an assumption of how much you think you will raise with auctions. If you think you could raise more with five but it was bad telecom policy, we would argue you should not let telecom policy be dictated by a perception on how much you might raise with auctions.

So whatever, you know, the decision is on auctions I would certainly hope, and our association would hope, that it not—that the revenue issue not be allowed to drive the future of telecom policy.

There is a lot of particular debate here about how many as far as competition and who should be allowed. I would definitely argue against allowing the revenue issue to dictate the policy.

Mr. MANTON. Thank you. Mr. Roos? Oh, my time has expired.

Mr. MARKEY. You can answer, Mr. Roos.

Mr. ROOS. I think that the entrenched cellular providers have done a great job at what they are doing, but we found, for example, in our experimental work in New York that over 20 percent of the phone calls made on the cellular network were not being answered or dropped, and I think that is indicative of the demand for the services is there and the technologies from all parties have to be updated. But there is room for more competition, and if you allow too many new people in with too small a piece what you will do is spread out the base so far that there will be no one that can get the economies of scale with the existing cellular people.

Mr. MANTON. Thank you, Mr. Roos. I yield back.

Mr. MARKEY. The gentleman's time has expired. And we will note that this is the committee that has jurisdiction over telecommunications policy, and I can promise you, Mr. deKay, that that is foremost in our mind as we move forward here. Other committees have jurisdiction over other items, but they will have to make their case as we make ours, coming back at them from a telecommunications perspective.

The gentleman from Kansas, Mr. Slattery.

Mr. SLATTERY. Thank you, Mr. Chairman. I will be very brief. I don't have, really, any questions. I think it has been pretty well covered here today, this topic. But let me just share with the panelists and the committee some of the guiding principles that I will rely upon as I decide how we can best handle this whole proposition.

First of all, I am going to be looking at it from the standpoint of how we can net the largest return to the Federal Government and to the taxpayers. In other words, how can we best auction off the spectrum in a manner that will generate the most revenue, point number one.

Point number two, I am going to be looking at it from the standpoint of how this is going to ultimately affect consumers in this country.

Point number three, someone who represents rural America needs to be concerned about their constituency, and I want to make darn sure that whatever we do is done in such a way as to encourage the development of state-of-the-art telecommunications capability in Sciotticville, America, as quickly as we can, and hopefully at about the same pace as it occurs in urban America. So that is a third consideration.

A fourth consideration, frankly, will be the question of, as I said, how will it affect consumers and how fast we can get this done. Because I happen to believe that we may be able to net taxpayers a lot of money, but we have to balance that off with how much time it is going to take to really get this technology to the marketplace.

So those are the things that I am going to be looking at. I think that it is important for us to try and make sure that the telephone cooperatives in this country, for example, have a role to play in this also. And whatever is done has to be done in such a way as to en-

able them to get their chance on the playing field, so to speak, and I think the historical reasons for those cooperatives existing are as valid in the future as they were in the past in terms of being able to make sure that these new services are delivered to rural America.

So I recognize that when we talk about auctioning the spectrum we are going to have to make a decision whether it is done nationwide or in a smaller market auction environment. I happen to believe that we have to figure out a way to do this that is not nationwide. We need to find ways to encourage smaller entrepreneurial firms to be able to participate in this process.

Now, what size the smaller, non-national markets will be is a matter for debate, I suppose, and we will have to hammer that out. But those are the guiding principles that this member is going to be relying upon as I try to sort out what is the best way to proceed from the standpoint of netting the taxpayers the greatest return; and secondly, from the standpoint of assuring that rural areas will have access to this state-of-the-art technology also.

So thank you, Mr. Chairman. I appreciate you calling this hearing. Was that about 3 minutes?

Mr. MARKEY. Three minutes and 15 seconds.

Mr. SLATTERY. Thank you, Mr. Chairman.

Mr. MARKEY. The gentleman's time has expired. The gentleman from Texas, Mr. Bryant.

Mr. BRYANT. Thank you, Mr. Chairman. I came in late and missed a good deal of the hearing. But I noticed, Mr. Schelle, when you were talking a moment ago, Mr. Wheeler asked, "Well, if you advocate that we not let the established operators bid, is it OK for the cable companies to bid? What is the difference?" I think that was the way the question was posed.

It wasn't clear to me. Did you necessarily advocate that the cable companies be allowed to bid?

Mr. SCHELLE. Yes. Our association includes some cable companies and we think they should be able to bid because it is not a mobile service. It is a totally different kind of service that they provide.

We also are not advocating that cellular companies cannot bid. We only are saying that where they already offer cellular service that it would be too strong of an advantage for the new players to compete against that. They can compete everywhere where they are not.

Mr. BRYANT. You mean to compete in winning the bid, or do you mean in—what do you mean?

Mr. SCHELLE. Well, I mean that, for instance, if whoever has the cellular system—there are 2 licensees in cellular and I will pick the wrong city, I am sure. I would just say, for instance, Dallas. If in Dallas there are 2 cellular companies that—in Dallas for PCS, those cellular companies, we recommend, would not be able to compete if they had more than a 20 percent interest in the pops of Dallas or the Dallas MSA. But they can compete anywhere else in the United States. You know, where they are not already operating a cellular business.

Mr. BRYANT. What I am asking, though, is are you saying—

Mr. SCHELLE. It is not a big imposition.

Mr. BRYANT. Because they will be able to—if we auction these off, their bid will be able to be much higher than yours or than what your members' bids would be? Is that the kind of thing you are talking about or what?

Mr. SCHELLE. I don't believe so. I think there is plenty of—the PCS industry is going to be such a great industry that there is going to be plenty of funds available from a variety of sources that will make the bids very, very I think; very acceptable to you all as you are looking for some funds. I don't think it is going to make a difference.

The interest by the cellular companies is not in how much revenue it is going to generate for the U.S. Government. The interest is to try to gain an additional license in an area that they already have in order to block the competition from newcomers.

Mr. BRYANT. Just observing, it looks to me like what you are doing if you win the—if you are already in business, and by winning the bid you enhance your competitive situation, you can bid a lot more than if you are just trying to enter the business.

I am not asking this looking for more revenue. I am asking it from a competitive standpoint.

Mr. SCHELLE. Well, you may do that. There are several theories and I don't know—since we have never done it, I don't know. One theory would be that the existing players would bid more because they want to keep other people out. The other approach would be that the newcomers would be a higher amount because they are not there and they would like to be there.

Mr. BRYANT. That is all the questions I have.

Mr. MARKEY. The gentleman's time has expired.

We will give each one of the witnesses 1 minute to summarize and to tell us what it is that you want us to remember as we go through the process over the next couple of weeks of putting together legislation that will deal with this issue.

Let's begin with you, Mr. Roos. One minute.

Mr. ROOS. We would recommend that the Pioneer's Preference concept be maintained and expanded, and that the definitions deployed go to the small radio telephone definition of the SBA, and that based on the experimental results, progress reports and Pioneer's Preferences that license grants to small businesses should be done on merit.

Mr. MARKEY. Thank you. Mr. deKay?

Mr. DEKAY. Speaking as an operator now, not in the association capacity, I thought the most interesting idea I heard today was the royalty or the fee concept, at least as an alternative to the big companies being able to dominate. I think that is a key alternative.

And again I would hope that this decision doesn't—that the revenue issue doesn't dominate the telecom policy. As an association, we would not be in favor of any set-asides or exclusions in terms of the auctions or licensing process. We think that all the parties should be able to participate but not be excluded or have anything set aside for any particular interest.

Mr. MARKEY. Thank you, Mr. deKay. Mr. Schelle?

Mr. SCHELLE. We are hoping that our license, the PCS license areas will be large enough to compete against cellular, that the number of licenses will be two but not more than three because of

the already entrenched competition, and we hope that we have enough megahertz, 40 megahertz, because of the forced Government regulation that the existing microwave users will be there for at least 3 years by force of Government regulation, that we have enough megahertz—meaning 40—to allow us to compete.

Mr. MARKEY. Thank you, Mr. Schelle. And, Mr. Wheeler?

Mr. WHEELER. You have heard some strong feelings here today. The reality is that those feelings are now going to get dumped, or have been dumped on the FCC and they have to cut babies in half, if you will, and make judgments.

We talked a lot about the Pioneer's Preference this morning. That, as you know, is going to get resolved in the court. This shouldn't get resolved in the court because somebody questions the way the baby got cut in half. You can solve that, or at least mitigate that by providing the FCC some guidelines as to how they ought to go about this process. Not micromanage, but do the same kind of thing that you did in Conrail and say, We, the Congress, want you to go do your job but here are the basic precepts that we think you ought to have: competition, encourage small business, and get the most for the taxpayer.

Thank you.

Mr. MARKEY. Thank you, Mr. Wheeler, very much. Again, a point I made earlier. We are going to move forward with legislation that incorporates some form of auction. Not pure, modified. But modified in ways that will reflect the most compelling arguments that are made. We sincerely suggest to every party that is of interest here that they aggressively pursue their perspective in the next week to 10 days in order to ensure that we properly weight your concern in any set of instructions that we send Salomon-like to the FCC. Wouldn't he have liked to have had a set of guidelines to have abused at that time?

But the legislation is going to move. We are under a deadline because of the budget process. But we want telecommunications values to animate whatever policy is ultimately adopted, and that is our full intention as a full committee and a subcommittee. We welcome all of your participation.

This hearing is adjourned. Thanks to all of our witnesses.

[Whereupon, at 11:54 a.m., the hearing was adjourned.]

[The following material was received:]



American Personal
Communications

April 29, 1993

BY MESSENGER

The Hon. Edward J. Markey, Chairman
House of Representatives
Subcommittee on Telecommunications and Finance
2133 Rayburn House Office Building
Washington, D.C. 20515

Re: Hearing on FCC Competitive Bidding Proposal

Dear Chairman Markey:

I very much appreciated the opportunity to testify before the Subcommittee on April 22, 1993. As you know, I testified on behalf of PCS Action, an organization representing entities large and small that will form the backbone of the emerging PCS industry in this country. This letter supplements my testimony to add a few positions of my own company, American Personal Communications ("APC"). This letter makes three points:

- APC long has supported anti-trafficking limitations and, contrary to CTIA's testimony on April 22, CTIA has not;
- The assumption that incumbent microwave users will not be immediately relocated out of PCS spectrum is required by government-mandated sharing requirements and is not a ploy by would-be PCS operators to hog spectrum; and
- CTIA has misstated the situation in the United Kingdom, which demonstrates the need for fewer licensees with more spectrum if PCS is to provide effective service to the American public.

Anti-Trafficking. APC long has been a leader in urging the FCC to adopt strong anti-trafficking regulations to prevent speculators from participating in the PCS industry. In particular, we have urged a two-year holding period, during which the PCS licensee would be unable to assign its FCC license to any unrelated entity. Coupled with our proposed

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The Hon. Edward J. Markey
 April 29, 1993
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18-month construction requirement, this restriction would prevent any unbuilt PCS system from being sold. The fact that all applicants will be required to build infrastructure-intensive PCS systems should act as a significant deterrent to speculation in PCS licenses.^{1/}

Contrary to the testimony of the Cellular Telecommunications Industry Association ("CTIA") at the April 22 hearing that it supports anti-trafficking restrictions, CTIA has argued as recently as its January 8, 1993 PCS reply comments that "the Commission should explicitly permit PCS-allocated spectrum to be readily transferable in whole or in part" (p. 14). If CTIA now joins us in believing that speculation in PCS licenses should be curbed rather than fostered, we urge CTIA to correct its position at the FCC.

CTIA's position on "ready transferability" of PCS licenses appears to be driven by its recognition that it may be necessary to combine the 20 MHz spectrum blocks it has proposed to permit PCS to be implemented effectively. We agree that if small, 20 MHz spectrum blocks are issued, it will be impossible for PCS licensees to operate PCS systems without aggregating spectrum with other licensees. The same is true of overly small licensing areas. CTIA's position on this score supports one of the central points of my testimony -- if small spectrum blocks or small licensing areas are offered, bids will be depressed by the certain knowledge that it will be necessary to combine them in the aftermarket. A private auction, just like the private auctions fostered by lotteries in the 1980s, will be necessary; speculators again will reap a windfall; service to the public will be delayed and diminished; and the Treasury again will be denied an opportunity to realize revenues produced by the sale of a public resource. Speculation only can be eliminated by auctioning spectrum blocks 40 MHz in size and licensing areas

^{1/} I should note that any anti-trafficking restriction makes sense only in the context of a sensible regulatory plan for implementing PCS. If small, fractured licensing areas or small, insufficient spectrum allocations are forced on the FCC, it will be necessary for PCS operators to aggregate geographic area and spectrum allocations as quickly as possible. If PCS markets and allocations are balkanized, anti-trafficking regulations could act to hurt our new industry and prevent us from competing with cellular and others.

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at least as large as major trading areas, in combination with anti-trafficking regulations.

Spectrum Availability. Cellular licensees each have exclusive access to 25 MHz of clear, unshared spectrum. PCS licensees, in contrast, will be required to share spectrum with some 10,000 incumbent microwave users. APC's studies, and those by independent groups and other PCS proponents, have shown that the need to share spectrum with microwave users cuts deeply into the spectrum available for PCS. If small spectrum blocks such as 20 MHz are assigned to PCS licensees, these incumbents can block PCS implementation in major cities.^{2/} In response to this point, Congressman Oxley asked whether spectrum availability studies are flawed because they assume that microwave users cannot be moved immediately.

As you know, legislation was proposed last year that would have grandfathered all microwave incumbents in the spectrum to be allocated to PCS for a period of eight years. You were among the leaders in opposing that legislation, which did not pass. The FCC has, however, determined that it will impose a "transition period" of between three and eight years during which no microwave incumbent can be moved involuntarily, and it has grandfathered permanently all "public safety" microwave incumbents (which constitute up to one-third of all incumbents) and all other incumbents that cannot be effectively accommodated in other bands. Any assertion that we can simply "move out" all incumbents and solve our spectrum congestion problem ignores the reality that we will be required by the FCC to share spectrum with all incumbents for years to come and with "public safety" and certain other incumbents permanently. For that reason, our

^{2/} In Chicago, for example, a 20 MHz allocation results in between 33 percent and 57 percent of the Chicago area having no spectrum available for PCS. With a 40 MHz allocation, these numbers drop to between 16 and 25 percent (depending on which PCS spectrum block is analyzed). In New York, an allocation of 40 MHz per licensee results in each licensee, on average, having no spectrum available for implementation of PCS in only 11.8 percent of the city's area. However, an allocation of 30 MHz results in 20.0 percent of the city's area having access to no spectrum, and an allocation of 20 MHz results in 29.7 percent of the city's area having no access to spectrum. In markets such as Los Angeles and Houston, spectrum congestion is even greater.

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studies have assumed the presence of incumbent microwave users.

Our studies have gone further, however, and have assumed that some incumbents will be moved. APC modeled the effects of moving out the "worst case" incumbents in each spectrum block. This assumes, very optimistically, that PCS licensees can each persuade incumbent microwave users -- which will have no legal obligation to accommodate PCS for between three to eight years -- to relocate voluntarily. Even with the worst-case microwave incumbents relocated, significant portions of important markets have very little spectrum available for PCS if the spectrum blocks that are licensed are only 20 MHz in size. Relocating incumbents cannot be a wholesale solution to introducing PCS to the American public.

Rural Spectrum and Market Size Issues. Spectrum availability analyses have focused on urban areas, both because microwave congestion is a greater problem in urban centers and because PCS cannot succeed as an industry without providing services to the core areas of our largest cities. Congressman Slattery thus asked whether microwave congestion is only a major-market problem. It is not.

For example, APC has analyzed spectrum availability in Wichita, Kansas and has found that several microwave paths over the central area of the city would preclude PCS from being offered to Wichitans on at least one PCS spectrum block if only 20 MHz is given to PCS licensees. In St. Louis, Missouri, as another example, microwave congestion in the downtown area rivals that of New York City. This result should not be surprising. Microwave transmission is used by public utilities, railroads and the petroleum industry around the country, in cities large and small. Accordingly, microwave congestion is a problem not only in the core areas of large markets, but in other areas as well. And, as noted earlier, PCS cannot succeed even in smaller markets if it doesn't have access to adequate spectrum in major markets.

PCS service will extend rapidly to less-populated areas only if PCS licensees are permitted to serve large geographic areas that permit rural consumers to benefit from regional economies of scale. As the cellular experience has shown, service is most effectively provided to rural areas when they are integrated with nearby metropolitan areas. It would be difficult, if not impossible, to provide high-quality, low-cost PCS service by constructing stand-alone PCS

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systems in rural areas. However, if PCS licensees are permitted to serve both urban and associated less-populated areas as many cellular carriers do now, service will be extended to many geographic areas that cannot support stand-alone PCS systems. Licensing PCS to hundreds of cellular-size areas across the country would be a prescription for the failure of PCS and would delay, rather than expedite, service to less densely populated areas.

The United Kingdom Experience. Surprisingly, CTIA pointed to the United Kingdom as an example of why more licenses should be issued and less spectrum per licensee should be made available. The facts point to precisely the opposite conclusion.

The United Kingdom authorized three personal communications network ("PCN," the British analogue to PCS) licensees and granted each licensee 50 MHz of spectrum. In the course of constructing PCN systems, two licensees merged into one. One PCN license, and the 50 MHz of spectrum it represents, actually was turned back to the government. Now, two PCN licensees will bring services on line this year with 50 MHz of spectrum each. The first to launch will be Mercury Personal Communications, a partnership including U S West. In response to Mercury's imminent debut, both U.K. cellular licensees finally have lowered prices to consumers.

CTIA's misstatements as to the amount of spectrum granted to PCN licensees appears to arise from its confusion of PCN with CT-2 service (second generation cordless telephone), which requires much less spectrum than PCS and was authorized in the United Kingdom in 1989. Four CT-2 licenses were issued, and the four licensees were granted a total of 10 MHz in the aggregate. The CT-2 experience also illustrates the dangers of issuing too many licenses -- of the four CT-2 licensees, three have failed. Only one licensee currently is providing service to the public.

The United Kingdom experience shows that issuing too many PCS licenses would disserve public policy. Even cellular operators make this point. For example, the president-elect of the cellular subsidiary of PacTel Corp. recently told reporters that "if five (PCS licenses) are given out, five

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won't be built."^{3/} This rather candid prediction lays bare the true intent of CTIA's attempt to marginalize or eliminate cellular's future competitors by urging Congress and the FCC to carve up PCS markets into small areas and grant PCS licensees entirely insufficient spectrum blocks.

* * *

Again, I appreciate the opportunity to testify before the Subcommittee. I would be pleased to answer any questions you or your staff may have.

Very truly yours,

Wayne M. Schelle
Wayne M. Schelle
Chairman

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^{3/} Silva, Cox Predicts Cellular to Lose Niche to Industries' Alliances, Radio Communications Report, April 19, 1993, at 8.

STATEMENT OF DR. JIM K. OMURA, CHAIRMAN, CYLINK
CORP., TO HOUSE SUBCOMMITTEE ON TELECOMMUNICATIONS
AND FINANCE ON OVERSIGHT HEARING, April 22, 1993

On behalf of Cylink Corp., I would like to express my appreciation to the Chairman and the members of the Subcommittee on Telecommunications and Finance for this opportunity to submit a Statement to the record of the Subcommittee's April 22, 1993 Oversight Hearing on the Administration's proposal to authorize the Federal Communications Commission to allocate radio frequency spectrum through a competitive bidding process.

I am a founder and the Chairman of Cylink. Based in Sunnyvale, California, Cylink commenced operations in August 1984. Cylink today is a leading supplier of commercial information security products and Part 15 spread spectrum radios. We employ 140 people in the U.S. and 10 people overseas. Approximately one-half of our spread spectrum radios are sold for export overseas, an area that represents the fastest growing segment of our business. Although our plans for growth are substantial, particularly in the areas of emerging communications technologies like PCS, we regard ourselves as a relatively small, but ambitious, company, particularly when measured against the industry giants with whom we compete.

Like many companies our size, we have faced tightened markets over the past several years, but have continued to commit a substantial portion of our capital and human resources to the research and development of new wireless communications products and services. That is our future. Because we believe that the

efforts of small and mid-sized companies, like ours, may be uniquely impacted by the passage of legislation permitting or requiring that the FCC award licenses by auction, we ask that due consideration be accorded to the special needs of small and emerging companies to ensure that the opportunities for entry and participation in emerging communications markets are not unduly limited to a few deep pocket players capable of outbidding all others. In our view, such a result would be antithetical to the entrepreneurial tradition and spirit of this nation and would impede the development and deployment of new communications and information services and products in the United States.

I. Background

Cylink's first line of business was the research, design and manufacture of data and voice communications security products. Today, Cylink's data encryption and high-speed communications products are used in public and private networks worldwide. Cylink's customers include over 200 of the Fortune 500 companies, and most major money center banks in the world.

After the FCC in 1985 liberalized its Part 15 Rules governing the unlicensed operation of low power RF devices, Cylink entered the market for the research, design and development of sophisticated low power, spread spectrum communications devices. Over the past seven years, Cylink has undertaken exhaustive research, development and design of spread spectrum radios in the Part 15 bands. These efforts have

resulted in the development of Cylink's "AirLink" series of spread spectrum radios in the 900 MHz, 2.4 GHz and 5.7 GHz bands as well as its design of a custom chip (the "CYCHIP") to form the basis of a spread spectrum cordless telephone operating in the 900 MHz band.

Given its leadership in the field of spread spectrum communications, Cylink has dedicated a substantial portion of its resources over the past several years to the design, development and experimentation of new PCS services and products. Through its Digital Spread Spectrum Technologies, Inc. subsidiary, Cylink has participated in every phase of the FCC's PCS rulemaking and has developed a PCS system architecture which the FCC has recognized as "innovative."¹

II. The Spectrum Auction Proposal

Now before the Subcommittee for consideration is a proposal to amend Section 309 of the Communications Act of 1934 to provide the FCC the authority to award Title III radio licenses by competitive bidding. The rationale underlying this proposal is twofold: first, that previous FCC licensing through comparative hearings and random selection has proven inadequate to ensure the timely deployment of new communications services and technologies in the U.S.; and, second, that the inherent value of the RF spectrum, a public asset, should more appropriately be captured by the public sector, rather than

¹Amendment of the Commission's Rules to Establish New Personal Communications Services (Tentative Decision), 7 FCC Rcd 7794 (1992).

privatized for the benefit of a licensee selected by hearing or lottery. Cylink believes that each of these reasons is compelling, but cautions that the third licensing alternative, that of auctions, itself poses the significant danger of limiting the ability of small or even mid-sized companies to participate in the development and deployment of new communications services and technologies in the U.S.

In Cylink's view, the inadequacies of both the comparative hearing and lottery licensing processes fully warrant consideration of extension of auction authority to the FCC. Comparative hearings, which have been the licensing mechanism for, among others, the mass media services and the cellular licenses in the thirty largest MSAs, have proven cumbersome, costly and slow. Oftentimes, the FCC must choose in a hearing between proposals with little, or no, significant differences. Applicants must incur substantial litigation costs and delays prior to commencing service. The hearing process itself thus has become a rite of passage and a limiting factor on the parties who may enter through this passage.

The use of lotteries, for which authority was extended to the FCC by the Communications Amendments Act of 1982, has resulted in exponential increases in the number of prospective entrants in emerging communications markets. The instances of lottery abuses, particularly in the cellular arena, are legion. Indeed, the use of lotteries has given birth to a new industry, that of the lottery mills which solicit thousands of prospective

applicants. Even though the large majority of applicants secured by these mills, and the mills themselves, have honorable intent, their principal motivation in seeking licenses through lottery selection appears nevertheless to be speculation in licenses. The transaction costs and delay involved in the operation of market forces to place these licenses in the hands of sincere service providers produces the same end as the litigation costs of the hearing process.

The use of auctions to award licenses appears to address the inadequacies of the hearing and lottery processes. However, the use of auctions poses the real threat that eligibility to enter emerging communications markets will be limited to deep pocket companies, with small to mid-sized companies, like Cylink, and entrepreneurs finding no place at the table. Although some parties have suggested to me that small companies and entrepreneurs simply could band together into consortia to compete with large companies in license auctions, I do not regard this as a real answer. Indeed, these parties simply seem to be confirming that only large players may meaningfully sit at their auction table by suggesting that small companies invest in larger entities to participate. And, yet, the spark of the individual and the entrepreneur has formed the base of many industries in our economy. No one asked Alexander Graham Bell or Thomas Edison to share their ideas and inventions with other parties.

How then can the opportunities for small companies and entrepreneurs be preserved in an auction environment? I have three proposals.

First, and most importantly, the FCC should give real meaning to its pioneer's preference program. This program was established to reward entrepreneurs, whether large or small, that have developed innovative communications technologies and services with a pioneer's license. The intent was to spur the innovation of new technologies, and to facilitate the availability of capital to entrepreneurs to innovate by promising that successful pioneers would receive the opportunity to deploy their services and products. In Cylink's view, the meaningful implementation of this program is essential to preserve the ability of entrepreneurs to enter in emerging markets and compete with the large companies with the ability to finance their purchase of licenses by auction. In short, small companies and entrepreneurs without the financial wherewithal to compete in the auctions and otherwise lacking the incentive to innovate (or ability to raise capital) simply will not enter the industry.

We believe that the FCC's pioneer's preference program may supply the needed incentive and ability to innovate in an auction environment, but note that the record to date on the Commission's implementation of this program is incomplete. Cylink is hopeful, however, that the FCC ultimately will issue pioneer's preferences to all worthy applicants. We caution against the temptation in an auction environment to withhold

pioneer's preferences because the value of those licenses may be otherwise captured as auction proceeds. The ultimate costs to the public from diminished entry and competition in the communications marketplace due to a lack of incentive or ability by entrepreneurs and small companies to innovate will far outweigh the value of any licenses awarded to deserving pioneers.

Our second proposal is that the FCC, in establishing service rules governing both existing and emerging services, incorporate the principles of openness and flexibility into those rules. By sculpting rules that ensure that unlicensed entities may access on fair and open terms spectrum needed to deploy their services, the Commission may promote the introduction of competition to licensed service providers by unlicensed providers.

To this end, Cylink has advocated the adoption of service rules in the PCS rulemaking that would provide an open interface for unlicensed PCS service providers, or PSPs, to access spectrum in an interference-managed environment to compete with the licensed service providers. Under this plan, small companies, and even individuals, could commercially provide a host of specialized PCS services.

The FCC's prior liberalization of its Part 15 Rules stimulated significant innovation and investment in the unlicensed, low power equipment market by small and mid-sized companies, including the development by Cylink of its spread spectrum radios. In the PCS context, however, Cylink believes

that the limitations of Part 15 unlicensed operations will preclude the satisfaction of many of the expected demands of the PCS marketplace, including the provision of specialized PCS services in office and campus environments, and therefore will not attract the needed innovation and investment of small and mid-sized companies. The financial inability of these companies to compete at auction with the largest players in the industry therefore likely would eliminate many innovative companies from the PCS field altogether absent the adoption of open and flexible interfaces between PSPs and the PCS licensees, as suggested by Cylink in the PCS docket. However, by incorporating within its PCS service rules opportunities for companies that do not receive a license to compete with the licensed service providers, the Commission may provide to licensed and unlicensed service providers alike the incentive to engage in the post-licensing pioneering of new services and technologies.

Our third, and final, proposal is simply that the auctions themselves not require full payment in one installment at the auction. Rather, we believe that alternatives such as installment payments, yearly royalties and license fees should be explored.

Cylink is aware that the Subcommittee Chair and its members have been especially concerned over the potential of auction legislation for limiting the opportunities of small companies to enter and compete in emerging communications markets. We commend the Subcommittee for its timely consideration of these matters. We appreciate the request to us to submit this Statement to the record of the Oversight Hearing and would be pleased to provide further information to the Subcommittee upon request.

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ISBN 0-16-041279-X



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